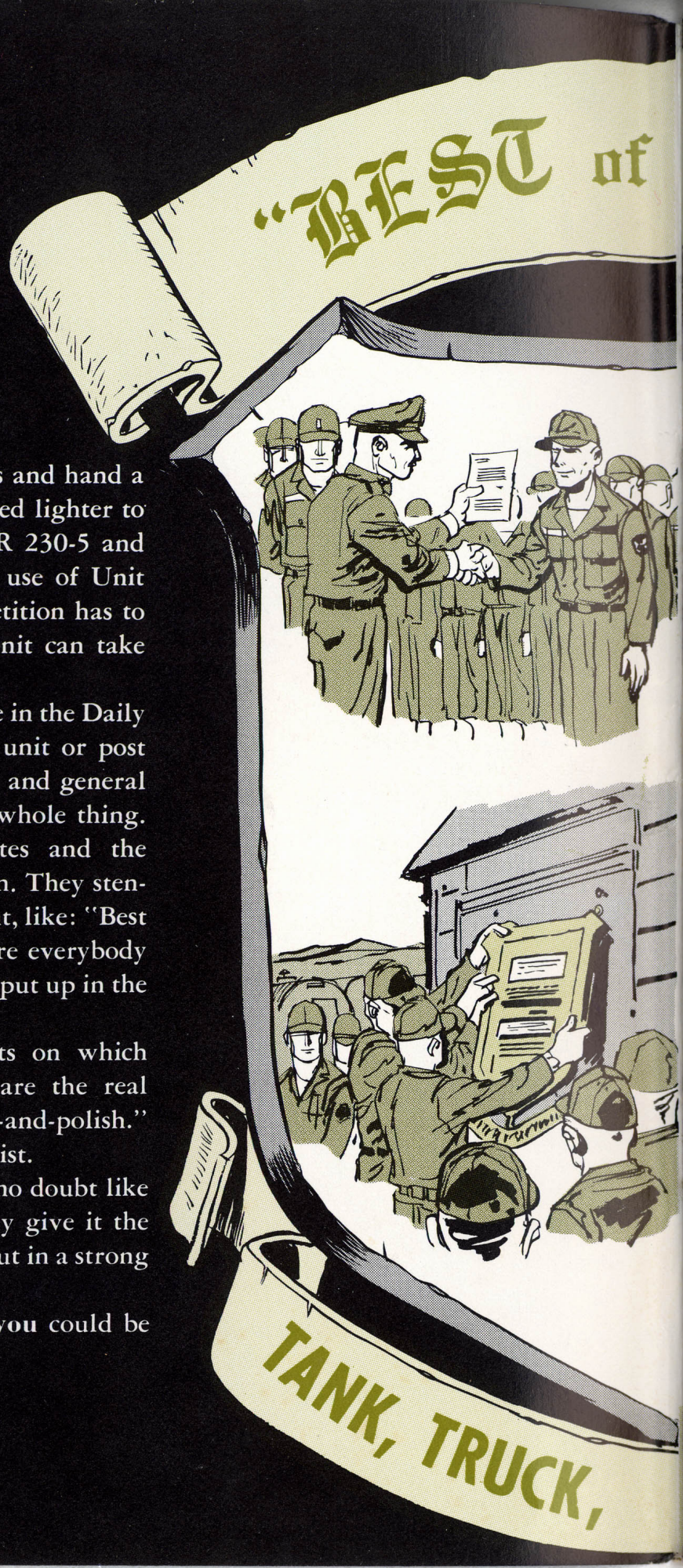
Issue 168
P.S
1966 Series
THE PREVENTIVE MAINTEN ION
GULP
ONLY FOUR MORE CANTEENS FULL, SIR.
PUFF PANT
MY PLEASURE TO HELP OUT, SON— AS WE SAY IN THE PENTAGON— MAINTENANCE IS A COMMAND RESPONSIBILITY! (GR-R-R-R)
VIP
Will Eisner
SPECIAL FEATURE
M2 MACHINE GUN
PAGES 2-18



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"Best Tank?"

"Best Carrier?"

Or "Best Howitzer?"

It could . . . with no sweat.

Some units give a 3-day pass and hand a Savings Bond, check or engraved lighter to the driver or crew selected. AR 230-5 and AR 230-10 give the word on use of Unit Funds for awards. (The competition has to be set up so all men in the unit can take part.)

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Of course, the check points on which equipment and men judged are the real important ones . . . no "spit-and-polish." Each outfit works up its own list.

Talk it over. Your CO will no doubt like the idea. He's the one to really give it the kick-off. In fact, he'll have to put in a strong hand all the way thru.

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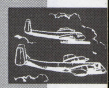

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BE YOUR OWN
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ON...
YOUR
M2
50-CAL
MACHINE
GUN

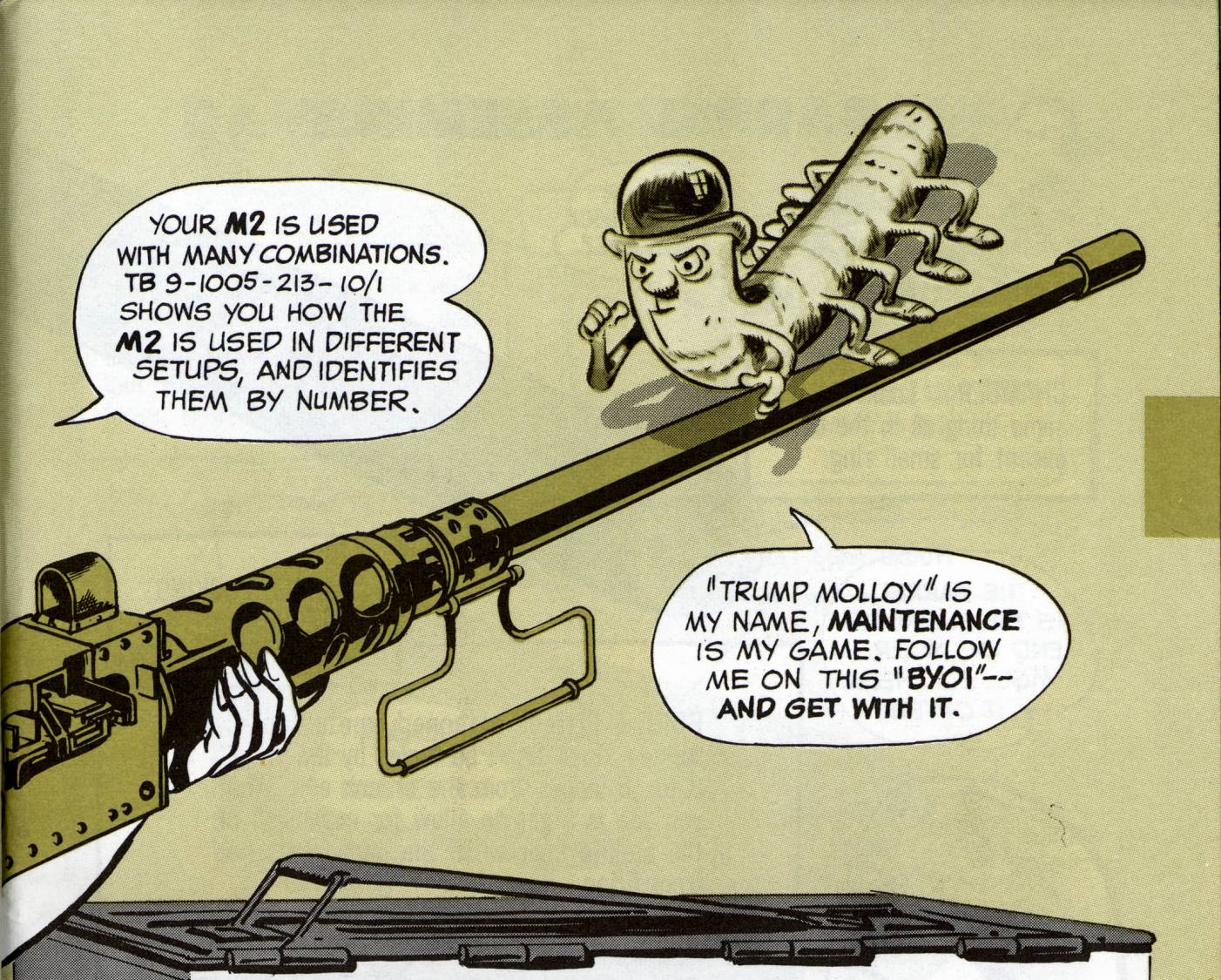
Your ol' reliable M2 is a mighty talented chunk of iron, what with the way it can be used with different mounts, with a switch of parts here and a change of parts there.

If it's going to live up to its reputation, though, it needs some help — the preventive maintenance kind — from you. Knowing what to look for is half the job . . . getting things fixed that need fixing is the other half. Read on and you'll see what to look for. The things that're in **bold green type** are what you want to tend to now — or even sooner.

Because the .50-cal has different uses, one set of components — the backplate group, f'rinstance — won't be the same for all the M2's. So pick out the group you have in your weapon and work from there.

While you're giving your shootin' iron the once-over, look for dirt, rust and the like. And also look for loose rivets, which is something you don't want your gun to have.

Now, on with the inspection.



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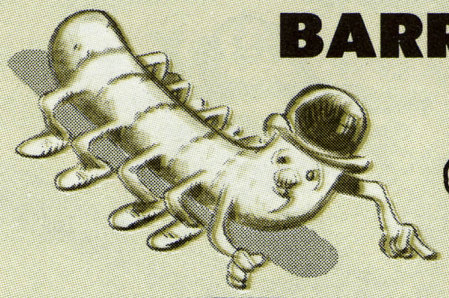
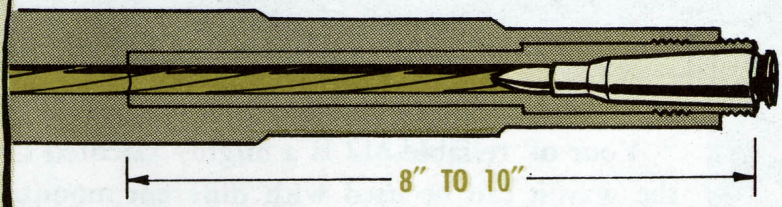
BARREL ASSEMBLY



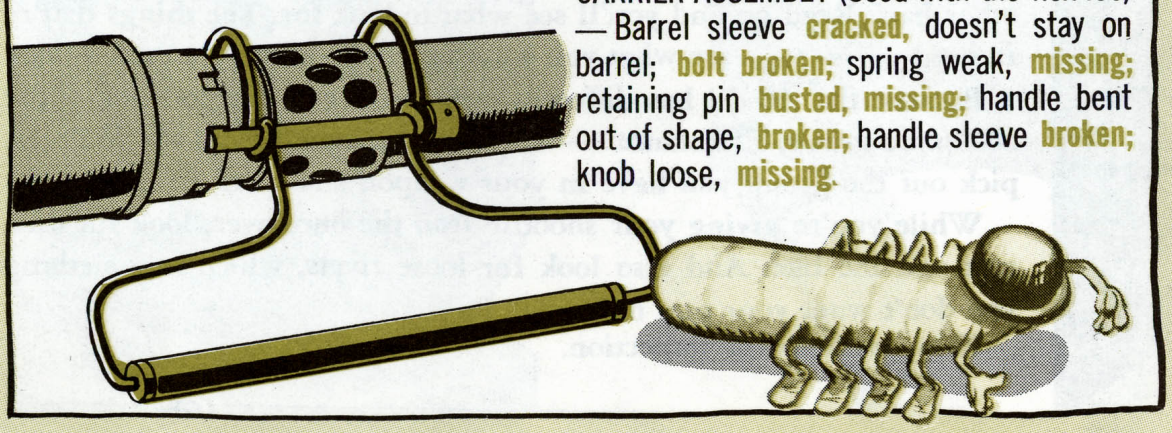
CHAMBER — Look for the same thing as in the bore, except for small ring.

BARREL LOCKING NOTCHES — Worn.

BORE — Pitted, carboned, metal-fouled, **bulged, rings.** Don't be fooled by the "ring" 8 to 10 inches from the breech end. What you see is a gap to allow for expansion of the stellite liner when the barrel gets hot from firing.



CARRIER ASSEMBLY (Used with the flex .50) — Barrel sleeve **cracked,** doesn't stay on barrel; **bolt broken;** spring weak, **missing;** retaining pin **busted, missing;** handle bent out of shape, **broken;** handle sleeve **broken;** knob loose, **missing.**



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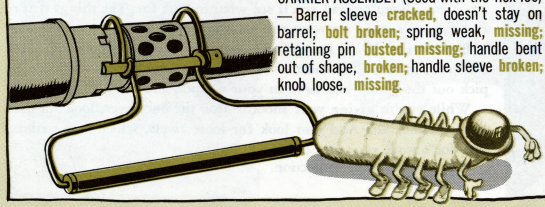


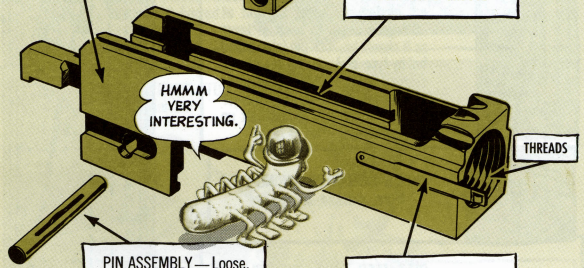
BARREL EXTENSION GROUP

NOTCH

BARREL EXTENSION — **Sides bent, cracked;** camways burred; bolt guide grooves and breech lock slot burred; shank worn, **battered,** loose; **threads burred, stripped.**

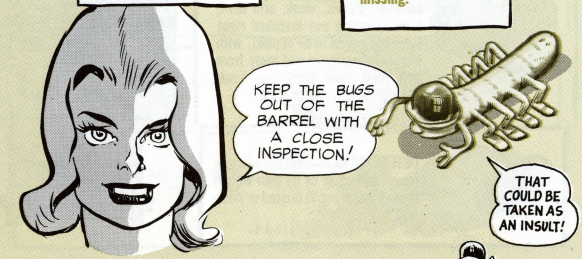
BREECH LOCK — Burred, **cracked,** binds in breech lock slot, **installed wrong way. Not latest type (Must have notch in top).**

BOLT GUIDE GROOVE



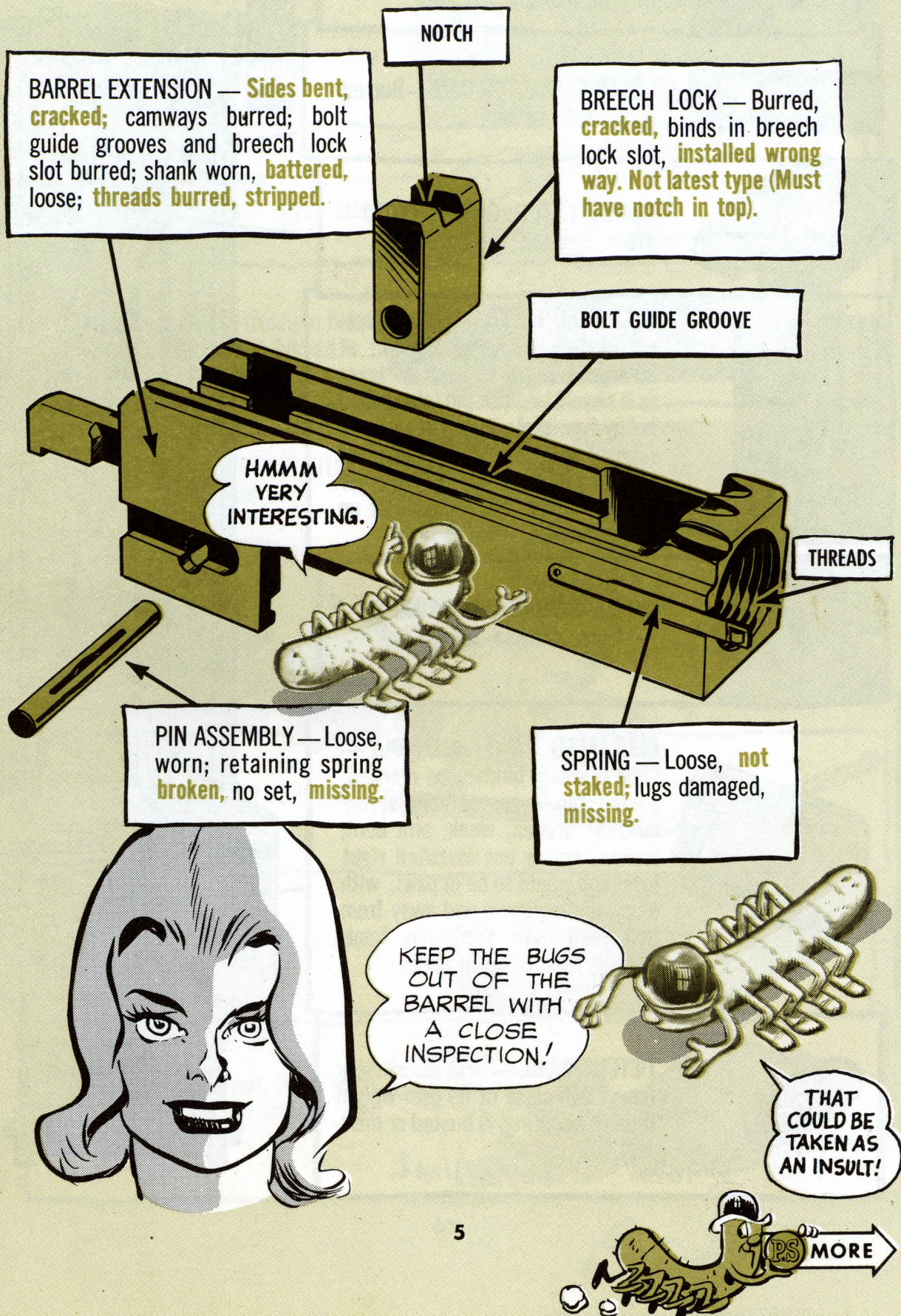
PIN ASSEMBLY — Loose, worn; retaining spring **broken,** no set, **missing.**

SPRING — Loose, **not staked;** lugs damaged, **missing.**

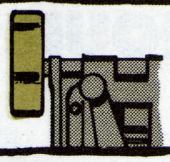


MORE

BARREL EXTENSION GROUP

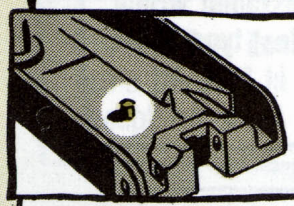


COVER

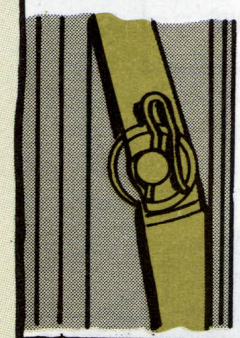


COVER LATCH SHAFT LEVER — **Busted, missing.**

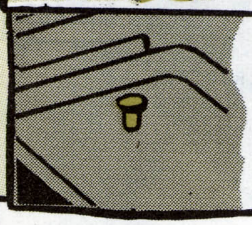
COVER EXTRACTOR CAM — Burred, badly **worn,** loose.



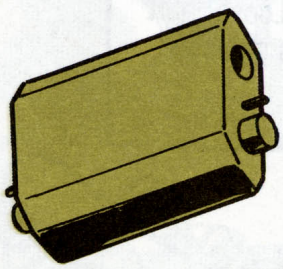
COVER LATCH SPRING STUD — Worn, **cracked, busted.**



BELT FEED LEVER — **Bent, cracked, busted; operating lug not at 90-degree angle to body of lever as it should be;** lock pin (also called bobby-type pin) **missing (don't use cotter key in its place);** shoulder pin burred, bent, **missing; plunger broken, missing;** lever not set up for correct direction of feed.



COVER EXTRACTOR SPRING STUD — Worn, **cracked, broken.**



BELT FEED PAWL ASSEMBLY — **Slide cracked,** binds; **stud cracked, busted;** pin loose; **retaining spring missing, broken,** weak; arm bent, **broken; spring not installed right** (oval end wants to be in pawl, with loop pointing down and away from belt feed pawl arm); pins bent, **busted;** pawl binds in slide.

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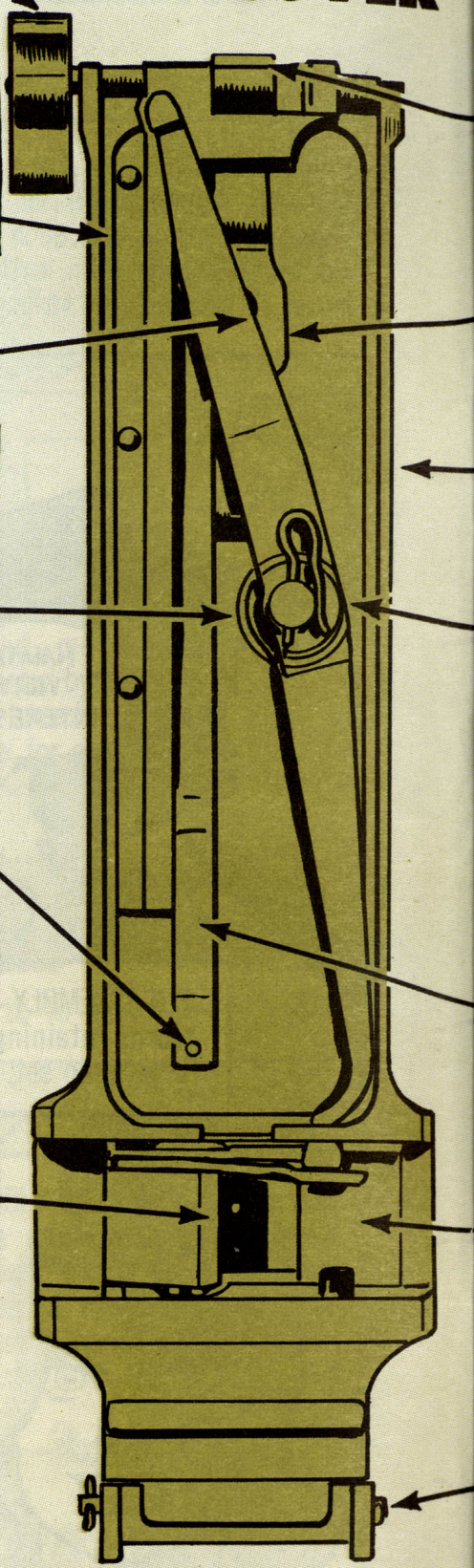
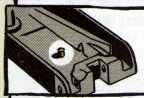


COVER GROUP

COVER LATCH SHAFT LEVER — **Busted, missing.**

COVER EXTRACTOR CAM — Burred, badly **worn,** loose.



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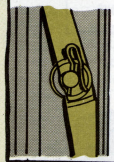

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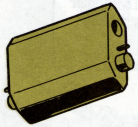

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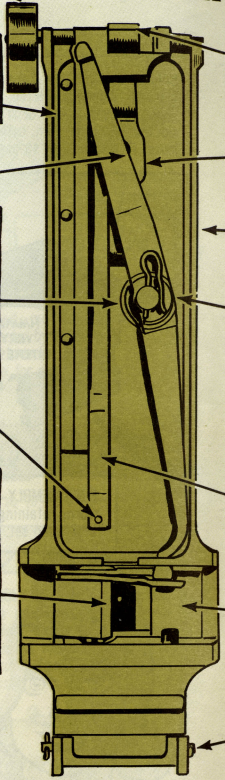
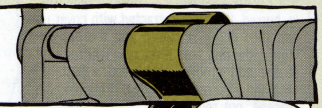


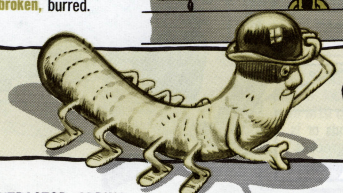
COVER LATCH — Burred, binds, loose; washer missing; **cotter key missing, installed wrong.**



COVER LATCH SPRING — **Broken,** weak, not seated over cover latch.

COVER — Loose in trunnion block, bent, bulged, **cracked,** burred.

BELT FEED LEVER PIVOT STUD — **Cracked, broken,** burred.



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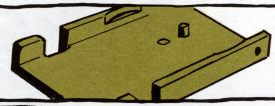
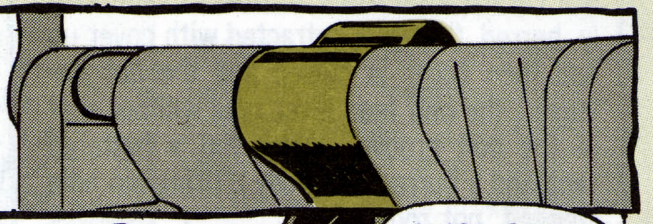


SLIDE — Loose in cover grooves, burred, **cracked.**

COVER PIN — Burred, bent, worn, **missing** (headed pin can be used as alternate).

GROUP

COVER LATCH — Burred, binds, loose; washer missing; **cotter key missing, installed wrong.**



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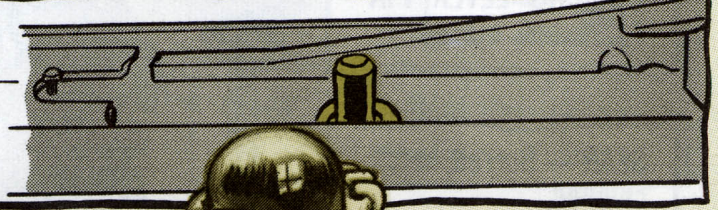

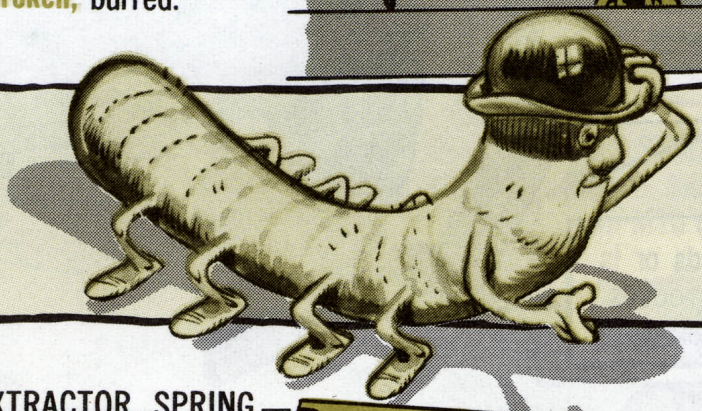

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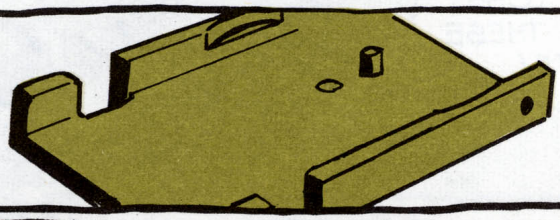
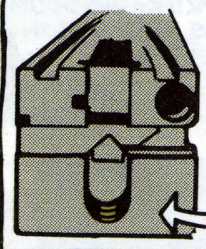


COVER PIN — Burred, bent, worn, **missing** (headed pin can be used as alternate).

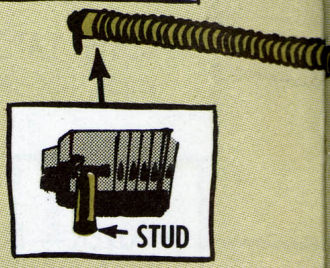
BOLT

BOLT BODY ASSEMBLY — Doesn't slide freely, burred. (If bolt is retracted with cover up and then cover is closed and the bolt released, the belt feed lever tang will not seat in the bolt groove, giving you a battered tang and a burred bolt body); firing pin hole **plugged,** not round.

BOLT CAM GROOVES AND T-SLOT — Burred, **cracked,** chips or **carbon buildup in T-slot.**



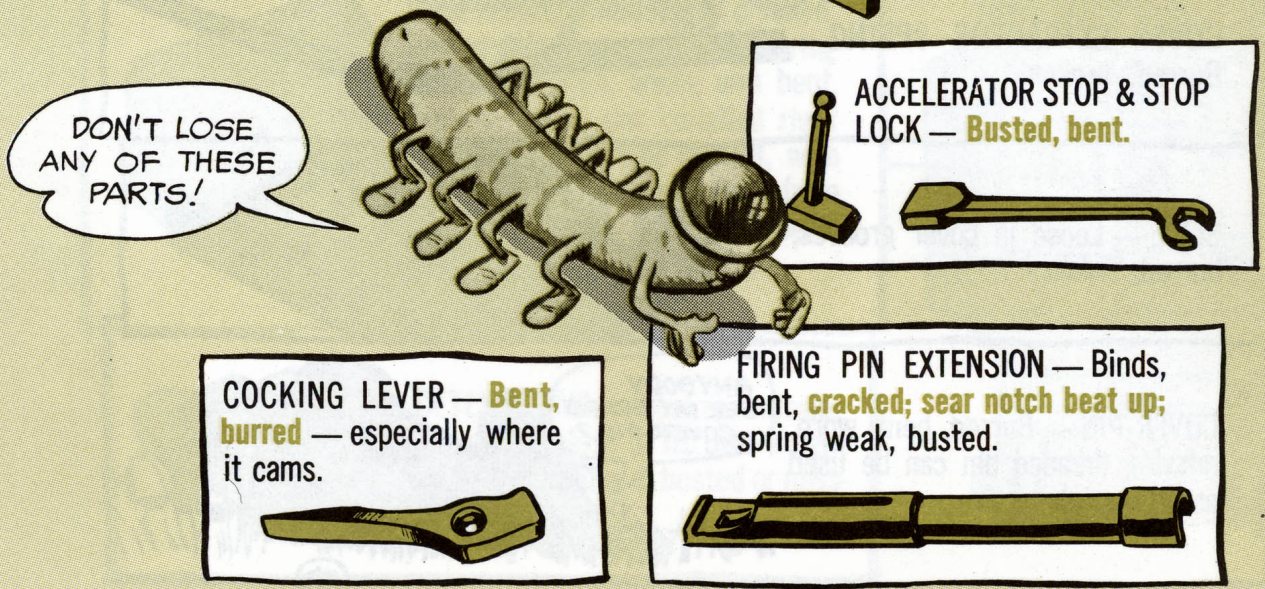
SEAR SPRING — **Not installed right** (should be in sear hole and notch in bottom of bolt), deformed, weak.



COCKING LEVER PIN — **Busted,** burred.

SEAR — Burred, **notch chipped.**

SEAR SLIDE — Binds or is loose in guide grooves, notch for sear battered.



ACCELERATOR STOP & STOP LOCK — **Busted, bent.**

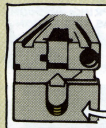
COCKING LEVER — **Bent, burred** — especially where it cams.

FIRING PIN EXTENSION — Binds, bent, **cracked; sear notch beat up;** spring weak, busted.

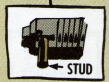
BOLT GROUP

BOLT BODY ASSEMBLY — Doesn't slide freely, burred. (If bolt is retracted with cover up and then cover is closed and the bolt released, the belt feed lever tang will not seat in the bolt groove, giving you a battered tang and a burred bolt body); firing pin hole **plugged**, not round.

BOLT CAM GROOVES AND T-SLOT — Burred, **cracked**, chips or **carbon buildup in T-slot.**



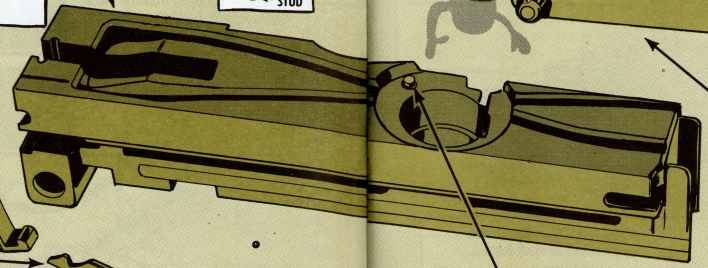
SEAR SPRING — **Not installed right** (should be in sear hole and notch in bottom of bolt), deformed, weak.



COCKING LEVER PIN — **Busted**, burred.

SEAR — Burred, **notch chipped.**

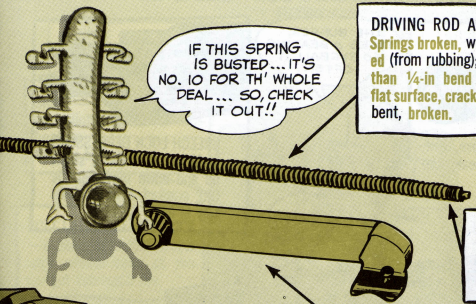
SEAR SLIDE — Binds or is loose in guide grooves, notch for sear battered.



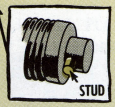
ACCELERATOR STOP & STOP LOCK — **Busted, bent.**

COCKING LEVER — **Bent, burred** — especially where it cams.

FIRING PIN EXTENSION — Binds, bent, **cracked; sear notch beat up;** spring weak, busted.



DRIVING ROD AND SPRINGS — **Springs broken**, weak, **coils flattened** (from rubbing); **rod shows more than ¼-in bend when rolled on flat surface, cracked, broken;** studs bent, **broken.**

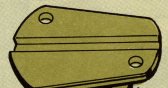


EXTRACTOR — Bent, **claw chipped;** ejector pin **not staked, broken.**

BOLT STUD — Burred, **busted.** (See if lock ring is missing from M10 charger.)

BOLT SWITCH STUD — Loose, **not staked,** burred.

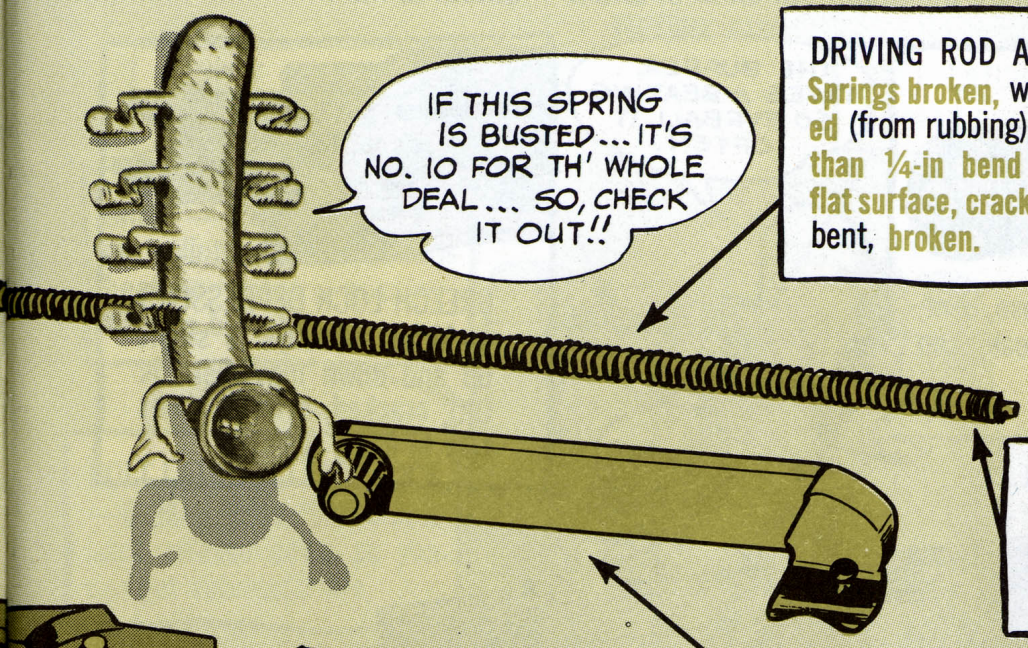
FIRING PIN — Binds, **cracked, broken,** tip **chipped.** Tip must be smooth and well-rounded.



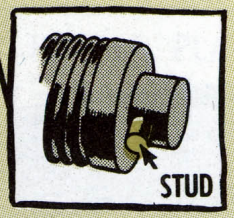
BOLT SWITCH — **Loose, burred, installed wrong. (Wrong installation of bolt switch can lead to battered belt feed lever if cover is closed and you try to function test the weapon.)**

MORE

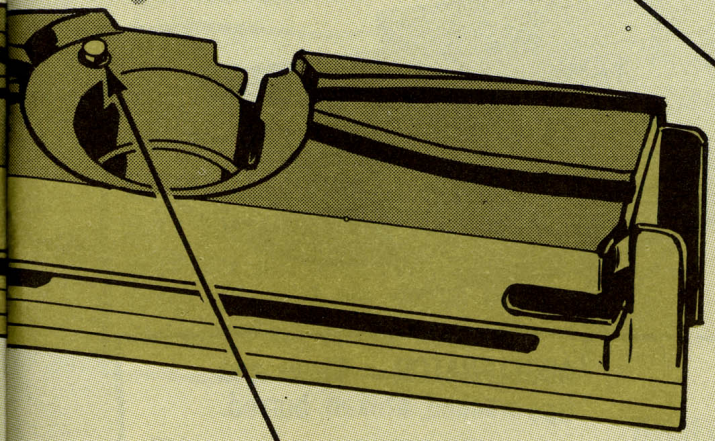
GROUP



DRIVING ROD AND SPRINGS — **Springs broken,** weak, **coils flattened** (from rubbing); **rod shows more than ¼-in bend when rolled on flat surface, cracked, broken;** studs bent, **broken.**

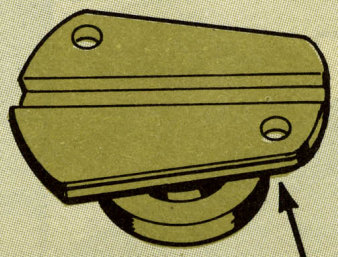


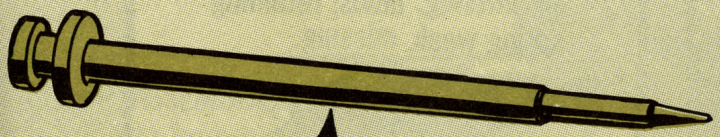
EXTRACTOR — Bent, **claw chipped;** ejector pin **not staked, broken.**



BOLT STUD — Burred, **busted.** (See if lock ring is missing from M10 charger.)

BOLT SWITCH STUD — Loose, **not staked,** burred.

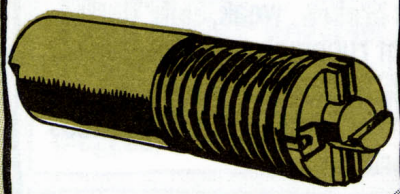




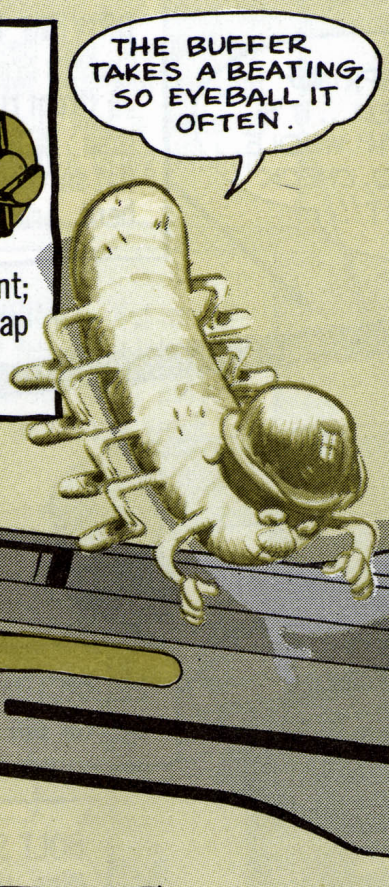
BOLT SWITCH — **Loose, burred, installed wrong. (Wrong installation of bolt switch can lead to battered belt feed lever if cover is closed and you try to function test the weapon.)**

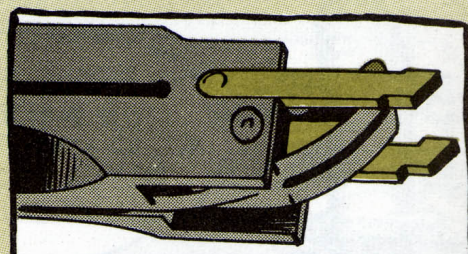
FIRING PIN — Binds, **cracked, broken,** tip **chipped.** Tip must be smooth and well-rounded.

BARREL BUFFER GROUP

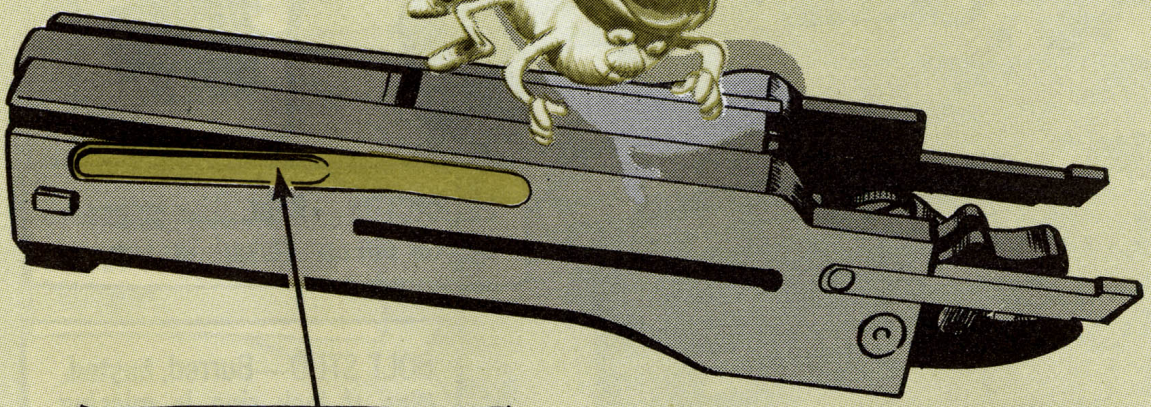


BUFFER — Rod loose, bent; spring **broken,** weak; cap loose.



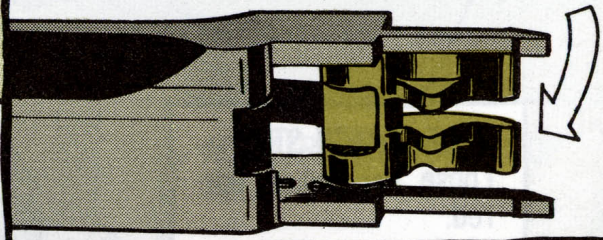


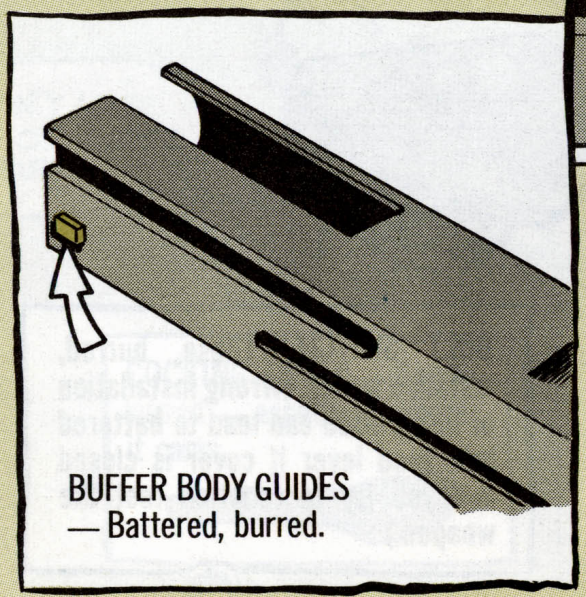
BREECH LOCK DEPRESSORS — Move sideways (a slight up and down movement is OK), **cracked, broken, don't stay in body,** twisted.



BUFFER BODY SPRING LOCK — Weak, **not staked,** burred.

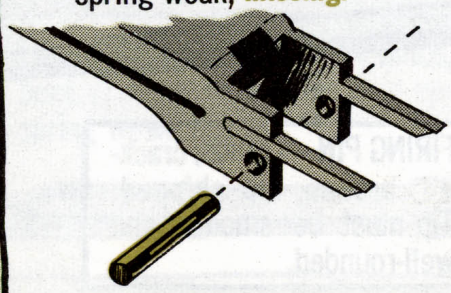
ACCELERATOR — Claws and tips **cracked, broken,** burred.





BUFFER BODY GUIDES — Battered, burred.

ACCELERATOR PIN — **Broken, missing,** binds; retaining spring weak, **missing.**



BACK PLATE GROUP

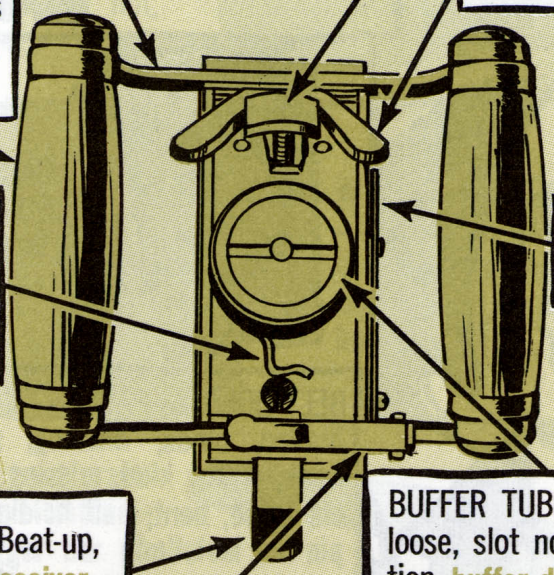
FLEXIBLE GUN

HANDLE FRAMES — Bent, cracked, broken.

BOLT LATCH RELEASE — Cracked, busted.

TRIGGER — Cracked, broken.

GRIPS — Loose, wood cracked, splintered; tube threads beat-up; screws missing, threads battered.



BOLT LATCH RELEASE LOCK — Broken, doesn't hold bolt latch release down so you can get automatic fire.

HANDLE PLATE — Cracked, broken.

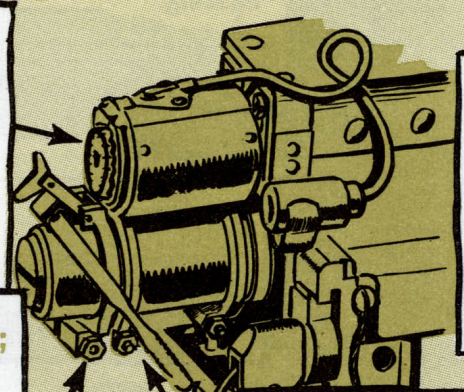
LATCH & LATCH LOCK — Beat-up, don't hold back plate in receiver; latch lock pin installed wrong, not keyed (head of pin should be up and cotter key on the bottom).

BUFFER TUBE — Adjusting screw loose, slot not in horizontal position; buffer disks frayed, cracked, broken, wrong number (buffer must contain 22 disks); plate broken, missing; pin and spring missing; sleeve cracked, busted, missing.

TURRET GUN

The components that're different from those on the flex:

SOLENOID—Loose on buffer tube, can't be adjusted (do the adjusting according to your TM); wiring frayed, loose, broken; connector loose, battered; safety wiring broken, missing; plunger won't seat, broken; nuts and screws loose, missing.



SPRING, SAFETY & FILLER PIECE — Broken. (Only M45 and M48 have all three parts. The flex doesn't have filler piece.)

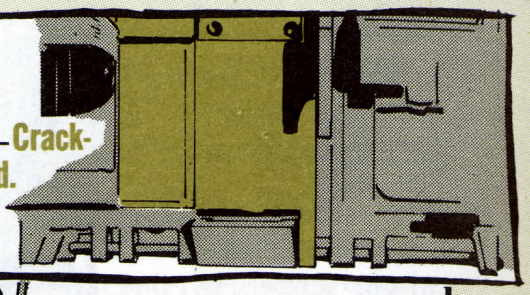
CLAMP ASSEMBLIES — Weak, broken; safety wire broken, missing.

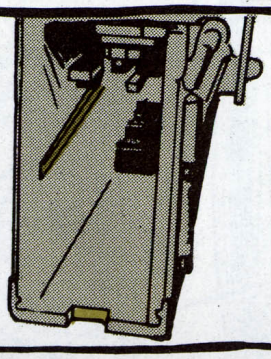
CLIP ASSEMBLY — Weak, busted.

TRIGGER — Doesn't fire weapon, loose on buffer tube, broken, safety wire busted, not attached; nut and screw missing.

RECEIVER GROUP

TRUNNION BLOCK—Cracked, chipped, gouged.

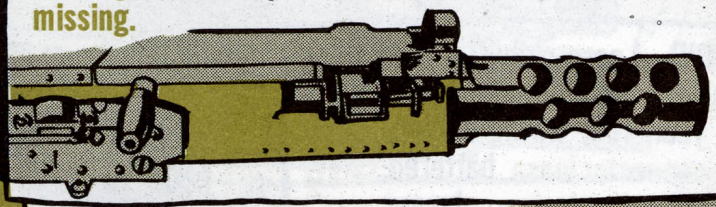




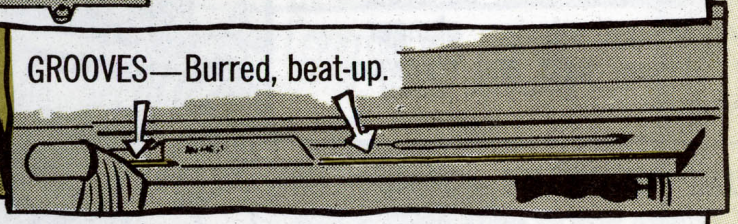
BACK PLATE FEEDWAY AND GUIDE CUTS — Burred, battered.

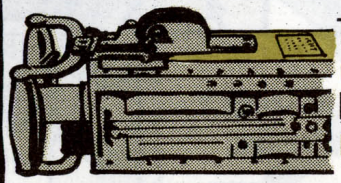
BELT HOLDING PAWLS—Cracked, broken, binds, missing; springs weak, wrong kind, missing; brackets loose, bent; belt holding pawl pin not installed.

SIDE PLATES — Bent, cracked, dented, bulged; extractor switch broken; threads stripped; nut loose, missing; cotter key broken, missing; spring weak, missing.



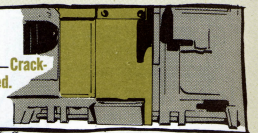
GROOVES—Burred, beat-up.



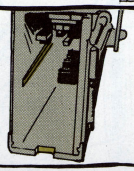


TOP PLATE—Dented, bulged, cracked; DA Label 19 (on headspacing) can't be read, missing.

RECEIVER GROUP

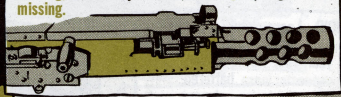


TRUNNION BLOCK—Cracked, chipped, gouged.

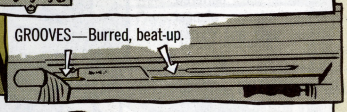


BACK PLATE FEEDWAY AND GUIDE CUTS — Burred, battered.

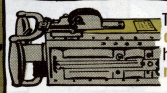
BELT HOLDING PAWLS — Cracked, broken, binds, missing; springs weak, wrong kind, missing; brackets loose, bent; belt holding pawl pin not installed.



SIDE PLATES — Bent, cracked, dented, bulged; extractor switch broken; threads stripped; nut loose, missing; cotter key broken, missing; spring weak, missing.

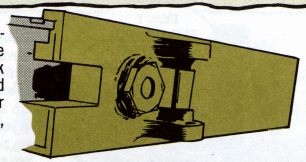


GROOVES—Burred, beat-up.

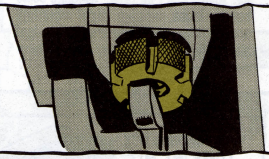


TOP PLATE—Dented, bulged, cracked; DA Label 19 (on headspacing) can't be read, missing.

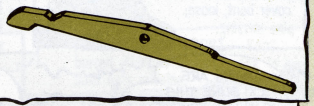
ALL TYPES OF MOUNTS



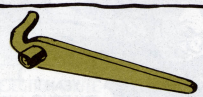
BOTTOM PLATE — Mounting brackets cracked, holes not round; plate dented, cracked, bent; breech lock cam loose, has too much play (should float slightly) binds; cotter key or safety wire broken, missing; nut, spring and screw missing.



ADJUSTABLE TRIGGER BAR STOP — Screw threads stripped; body cracked, broken; nut loose, missing, threads stripped; spring weak, busted.



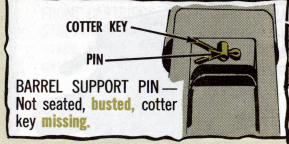
TRIGGER BAR — Binds, bent, cracked, busted, doesn't have notch in top; not installed; trigger bar pin assembly bent, missing, lock broken.



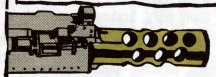
SOLENOID TRIGGER BAR (On M45 Only) — Bent, burred, busted.

BOLT STOP — Bent, broken, missing.

BOLT LATCH ASSEMBLY — Bolt bent, busted; spring weak, busted; latch burred.



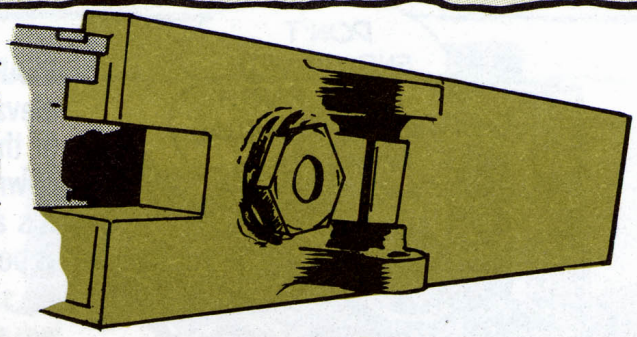
BARREL SUPPORT PIN — Not seated, busted, cotter key missing.

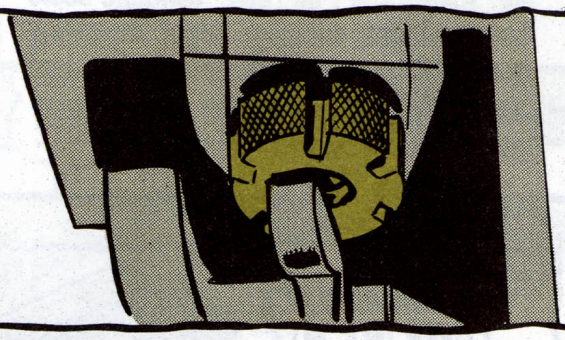


BARREL SUPPORT — Loose, cracked, bearing surfaces burred.

ALL TYPES OF MOUNTS

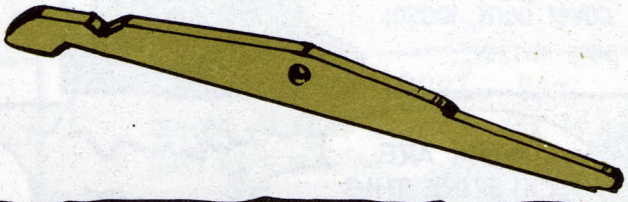
BOTTOM PLATE — Mounting brackets **cracked,** holes not round; plate dented, **cracked,** bent; breech lock cam loose, has too much play (should float slightly) binds; cotter key or safety wire **broken, missing;** nut, spring and screw **missing.**

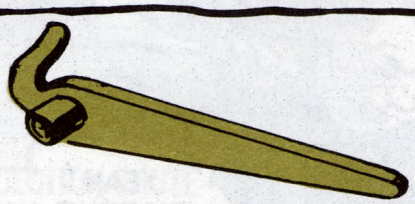




ADJUSTABLE TRIGGER BAR STOP — Screw threads **stripped;** body **cracked, broken;** nut loose, **missing,** threads **stripped;** spring weak, **busted.**

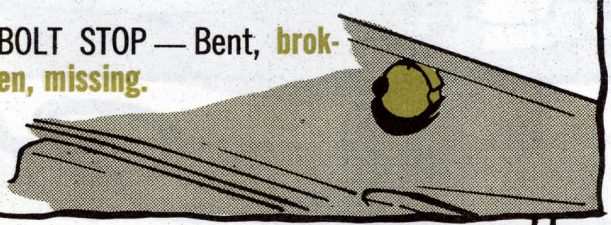
TRIGGER BAR — Binds, bent, **cracked, busted, doesn't have notch in top;** not installed; trigger bar pin assembly bent, **missing, lock broken.**



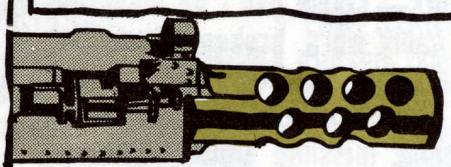


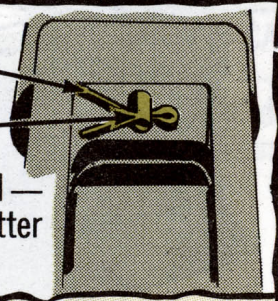
SOLENOID TRIGGER BAR (On M45 Only) — Bent, burred, **busted.**

BOLT STOP — Bent, **broken, missing.**



BOLT LATCH ASSEMBLY — **Bolt bent, busted;** spring weak, **busted;** latch burred.

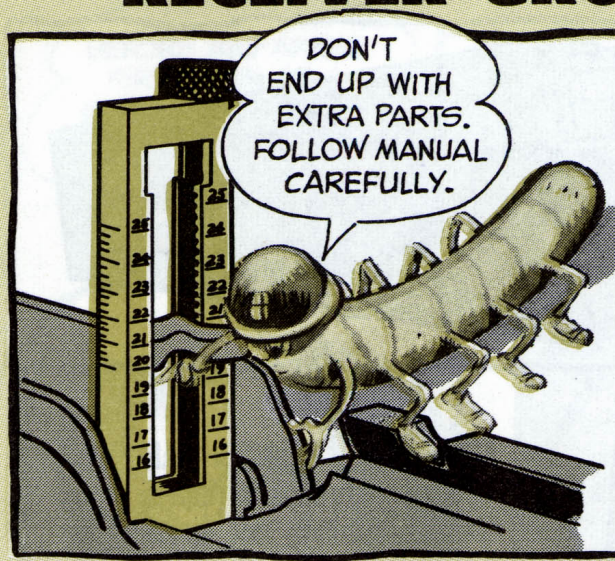




BARREL SUPPORT PIN — Not seated, **busted,** cotter key **missing.**

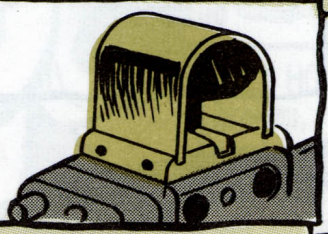
BARREL SUPPORT — Loose, **cracked,** bearing surfaces burred.

RECEIVER GROUP FLEX AND XM26 CUPOLA



REAR SIGHT ASSEMBLY — Windage and elevating screws bent, burred, stripped (If the elevation assembly moves up and down when you turn the windage knob, it's a good bet that the windage screw is bent); knobs can't be turned, no clicking sound when they are turned; missing; scales can't be read; windage scale screws loose, missing; sight mounting screws loose, not staked, missing; leaf assembly bent, has play or flip-flops because of weak spring.

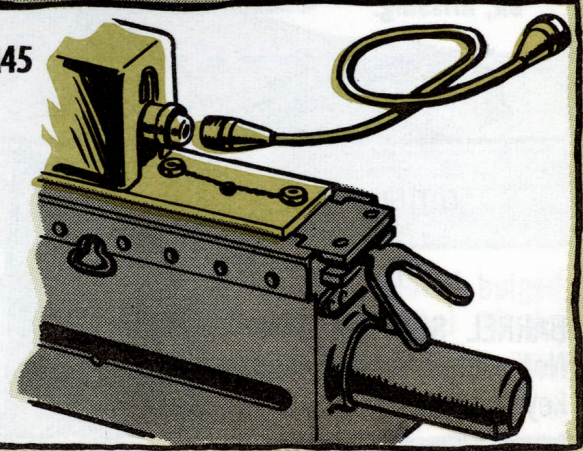
FRONT SIGHT — Blade bent, loose; cover bent, loose; pins missing.



TRUNNION BLOCK COVER (M1, M13, M45, M48) — Bent, loose; pins missing.

SOLENOID — Loose, can't be adjusted; plunger badly worn, broken; cover battered, missing; wiring frayed, loose, broken; connectors loose, broken; safety wire broken, missing; bolts loose.

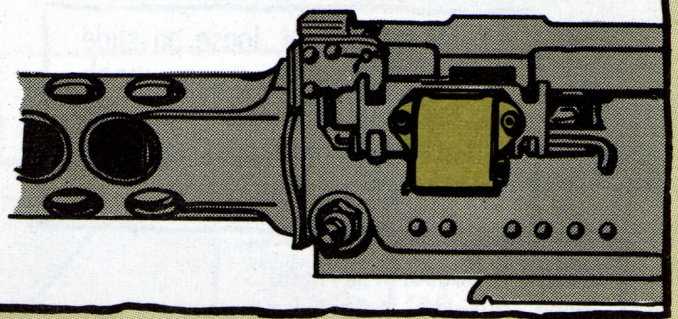
M45

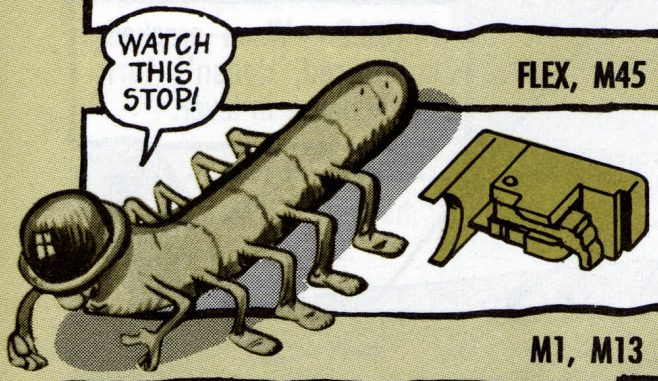


RECEIVER GROUP

M1

LINK CHUTE & ADAPTER ASSEMBLY — Twisted, broken; link chute dented; pin bent, broken; threads of studs stripped; nuts have stripped threads, missing.



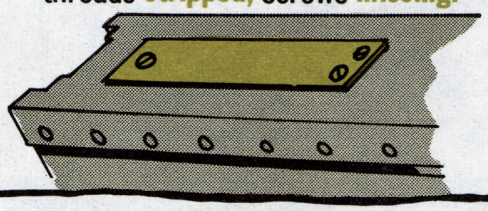


FLEX, M45 AND M48

CARTRIDGE STOP ASSEMBLY — Link stripper worn, doesn't move, burred; pawl broken, burred; spring weak, broken, missing; plunger and pin missing.

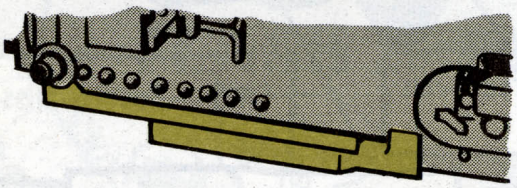
M1, M13 AND M48

TOP PLATE COVER — Missing; screw threads stripped, screws missing.

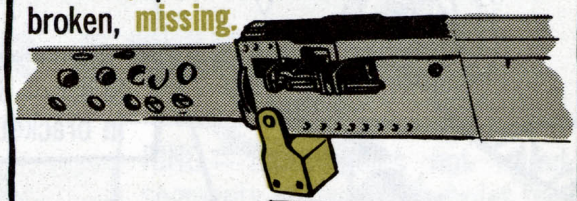


FRONT GUN SUPPORT — Bent, burred, threads stripped; one or both nuts missing.

EJECTION CHUTE — Dented, cracked.



MOUNTING BRACKET — (For M13) Cracked; pin busted; cotter key broken, missing.



FLEX, M13, XM26 AND M45 AND M48 (WHICH HAS FRONT CARTRIDGE STOP ONLY.)

FRONT CARTRIDGE STOP — Assembled wrong, fits tight, busted.

REAR CARTRIDGE STOP — Assembled wrong, doesn't move, broken.

LINK STRIPPER — Burred, doesn't move, prongs busted.

RETRACTING SLIDE ASSEMBLY

FLEX AND M45

LEVER — Cracked, loose on slide; spring installed wrong, weak, busted; nut and washer missing; nut not keyed right, missing; cotter key broken, missing.

BOLT HANDLE (when used)—Burred, busted.

BOLTS—Loose, broken; nuts loose, missing; cotter keys broken, missing.

HANDLE — Wood cracked, splintered, doesn't turn freely, loose in lever.

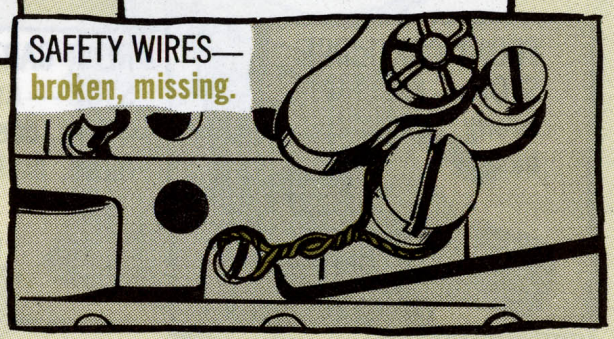
SLIDE—Burred, binds in bracket.

PINS — Busted, missing.

STUDS—Loose, broken.

BRACKET — Cracked, slideway burred.

SAFETY WIRES—broken, missing.

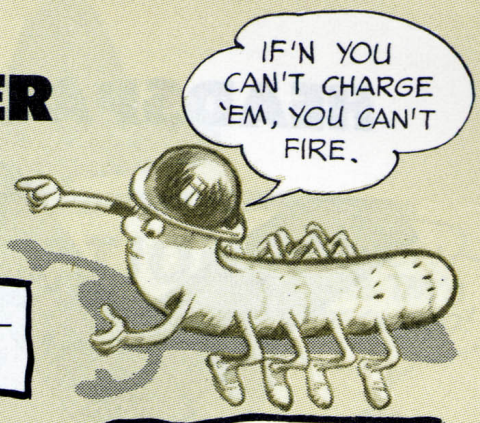


SPRING—Weak, missing.

PLUNGER — missing.

M10 CHARGER

M1, M13, XM26 AND M48



SPRING HOUSING—**Cracked;** spring doesn't work, **busted.**

OVERALL CHARGER — **Loose on gun.**

COVER—Dented, **twisted, cracked,** lips bent or **broken.**

SLIDE — Burred, binds; pulley worn, binds, burred.

SAFETY WIRES— **broken, missing.**

HOUSING — Dented, twisted, **cracked.**

SWIVEL — Binds; pulley burred, binds.

PLATE — Beat-up.

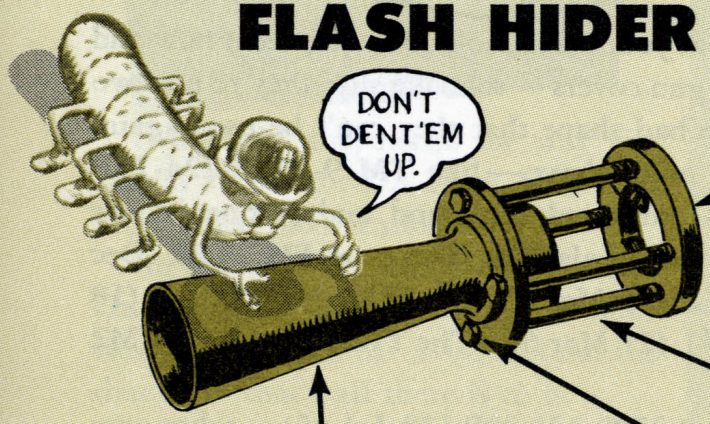
CABLE — **Kinked, strands broken, ball ends missing.**

LATCHES — Don't hold cover and swivel pulley plate, **broken.**

HANDLE—Burred, **cracked, doesn't stay on cable.**

In addition to the guns, some of the equipment used with them needs close eyeballing.

FLASH HIDER ASSEMBLY



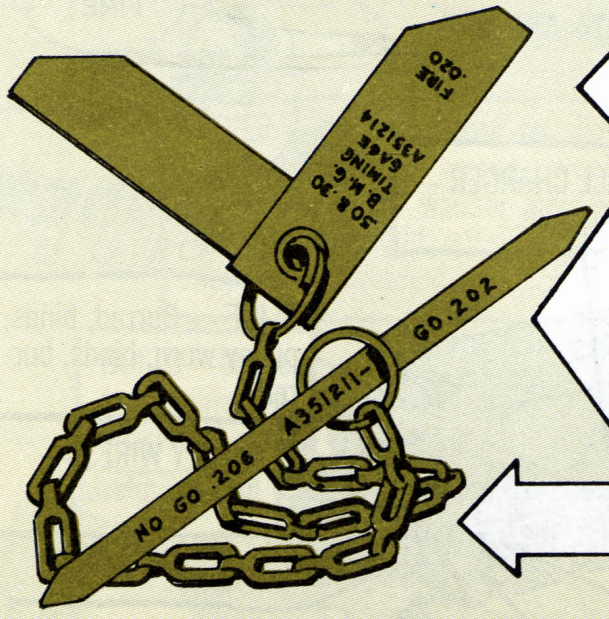
RING — Bent, holes not round; segments **loaded with powder fouling,** burred, twisted, **broken, missing.**

SCREWS — Bent, loose, **stripped threads, missing.**

NUTS — Loose, **threads stripped, missing.**

CONE — Dented, **cracked,** holes not round.

HEADSPACE and TIMING GAGES



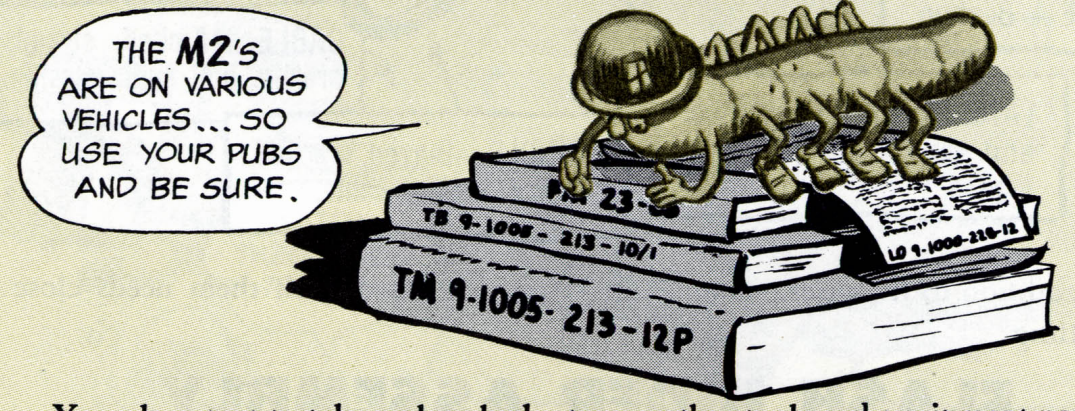
TIMING GAGE — **Worn, broken.**

HEADSPACE GAGE — **Worn, broken, wrong markings** (some gages have GO on the thick end and NO GO on the thin end. You want GO on the thin end and NO GO on the thick end).

CHAIN — **Busted, missing.**

Remember to have people up the maintenance line check the gages annually.

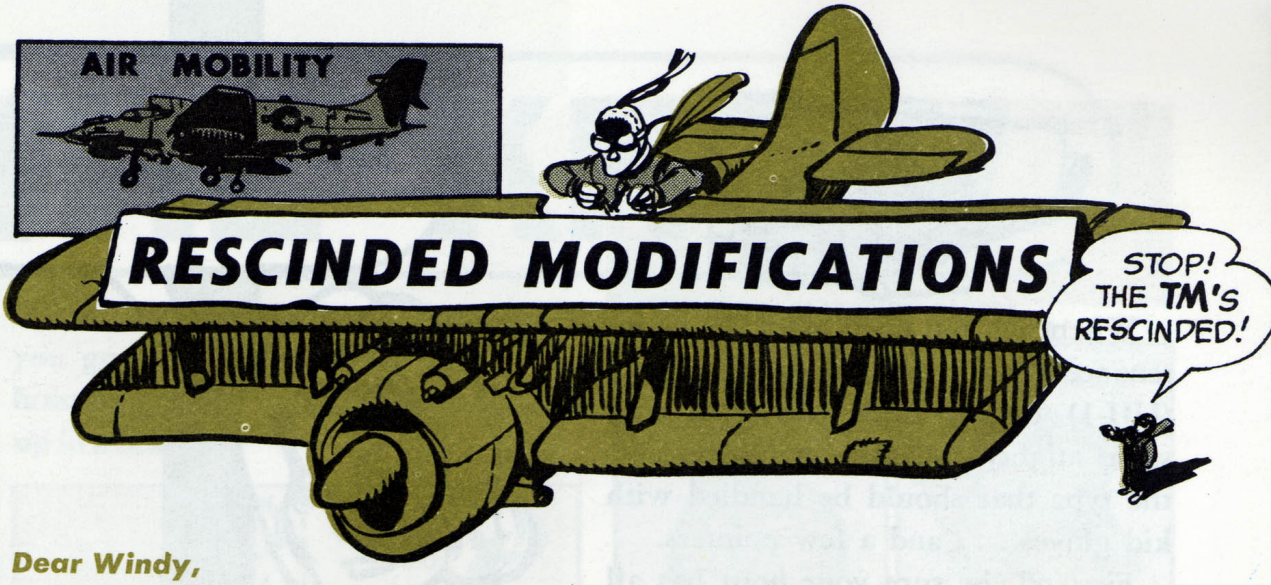
KNOW YOUR PUBS



You also want to take a close look at your other tools and equipment now and again — items like cleaning rods and gun covers — to make sure they're not two hoots and a holler from being in such bad shape that they can't be used again.

No matter what publications you might have — like TM 9-2320-224-25P (Dec 64) for the M114 and M114A1 armored command and reconnaissance carrier — there're three others that you can also use. These are FM 23-65 (Dec 55) with Ch 1 (22 May 56) and Ch 2 (10 Mar 59) . . . LO 9-1000-228-12 (18 May 66) . . . and TB 9-1005-213-10/1 (27 Mar 64). The TB tells you what M2 .50-cal guns go with what mounts.

And don't forget your PLL — TM 9-2300-223-20P (28 Jul 65) — when you have a weapon that's issued with tank-automotive equipment. And TM 9-1005-213-12P (14 Jan 64) and change 1 (17 Mar 64) is for you if your shooter's a separate TOE line item.



Dear Windy,

There seems to be just a little bit of confusion about aircraft modifications that have not been applied to our aircraft. The old TM-1's, TO's, TB's and MWO's authorizing them have long since been canceled.

Can you tell me how to maintain an up-to-date DA Form 2408-5 on this age-old problem?

Sgt R. P. K.

Dear Sergeant R. P. K.,

No sweat.

It's true that some pubs were canceled before all the aircraft were modified. In some cases, the aircraft configuration change was done, in fact, by the replacement of old parts with new parts.

In other cases the modification was not done, but it is not legal to apply a canceled modification. You may be able to get an exception, tho, if you can justify incorporating the modification on the basis that without it (as an example) you have a safety-of-flight hazard.

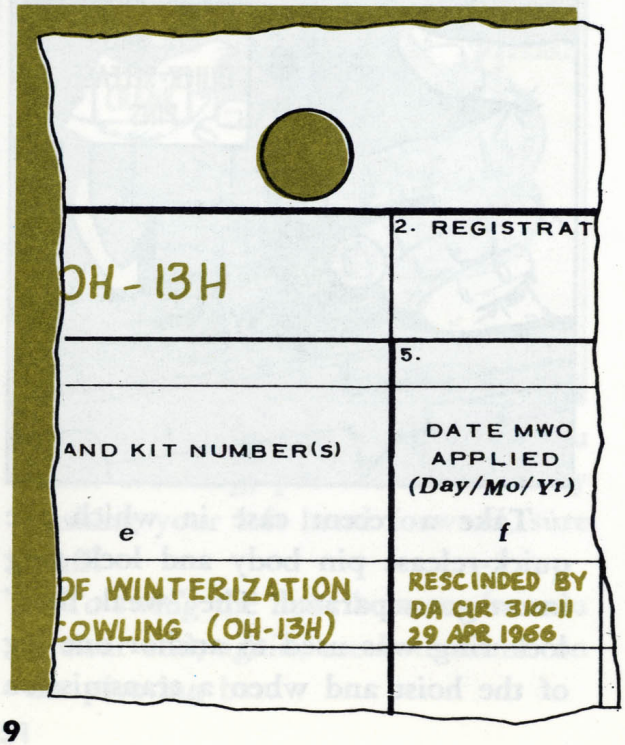
In such a case your request should go to:

U.S. Army Aviation Materiel Command
ATTN: AMSAV-FMC
St. Louis, Mo. 63166

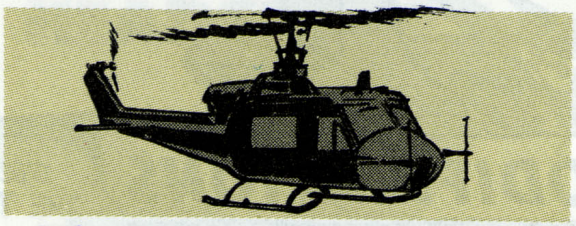
Ordinarily, tho, here's the way you should fill out the DA Form 2408-5 on a rescinded modification —

On the left side, enter the usual info. On the right side of the form enter Rescinded by DA Cir 310-XX (and the date) . . . that's all there is to it.

A rescinded modification is not required to be done and therefore does not have any adverse effect on the materiel readiness status of your birds.

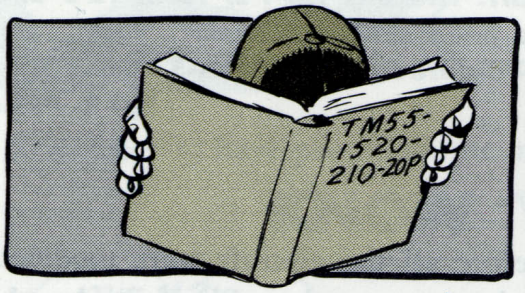


Windy

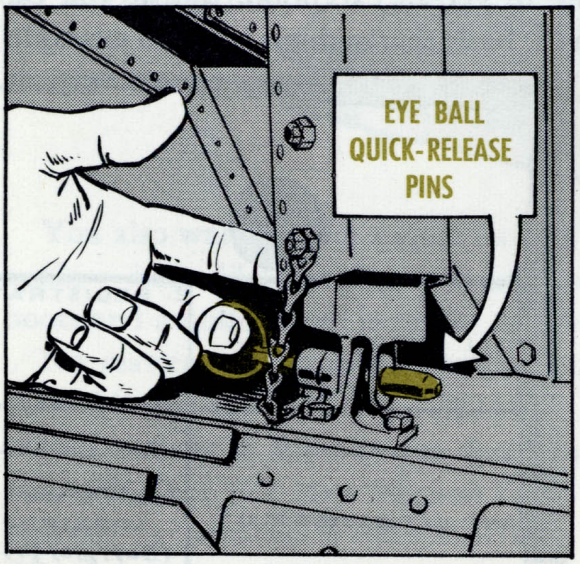


Whenever you make with the maintenance hoist mounted on the Huey (UH-1) engine deck you're moving some mighty expensive equipment — the type that should be handled with kid gloves . . . and a few pointers.

First off, be sure your hoist has all the right parts as listed in TM 55-1520-



210-20P (14 Feb 66). Especially eyeball the quick-release pins because a lot of weight hinges on them.



Take a recent case in which the quick-release pin body and lock ring insert got separated. The "weak link" lock ring was used to anchor one leg of the hoist and when a transmission

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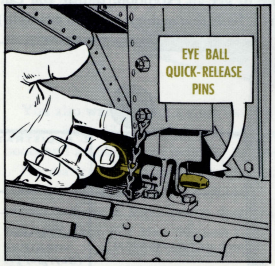
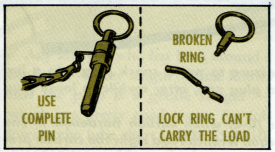


Take a recent case in which the quick-release pin body and lock ring insert got separated. The "weak link" lock ring was used to anchor one leg of the hoist and when a transmission

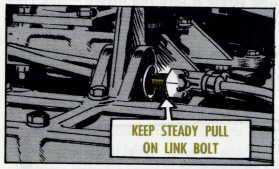
HEAVE-HO . . .

IN THE KNOW

was swung away from the chopper — you guessed it — the ring broke, the hoist flipped and the transmission ended up in a heap!!



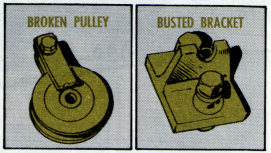
Next, don't overload the hoist on a transmission lift or the hoist will take it on the chin. You have to keep a steady hand pull on the last bolt to come out (the link bolt) as the hoist begins to



take the load. Cranking the hoist past the bolt release point means you're trying to lift the whole kit and caboodle.

So, when a mechanic kept cranking on the hoist recently, something had to give. A pulley broke — as it's supposed to when you try to lift more than the hoist capacity of 600 pounds. 'Course this prevented breakage to a more costly bird part. One of the mounting brackets also let go.

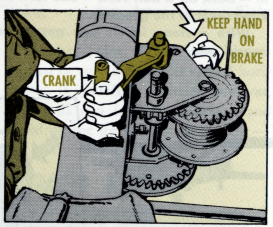
OVER CRANKING CAUSES . . .



Finally, remember that lifting a weighty transmission, engine or rotor head is a two-fisted operation.

Be sure your hands are not greasy . . . slips count. Put your left hand firmly on the brake handle and your right hand firmly on the hoist handle.

Release the brake by pulling it toward you — but keep your left hand on the brake just in case — and crank

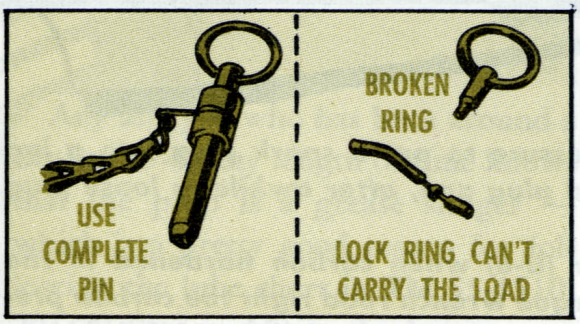


away with your right hand. When you finish cranking, put the brake on by pushing your left hand forward, sure 'nuff.

To swing the hoist be sure the area is clear and, again, use both hands on the pivoting bar.

THE KNOW

was swung away from the chopper — you guessed it — the ring broke, the hoist flipped and the transmission ended up in a heap!!



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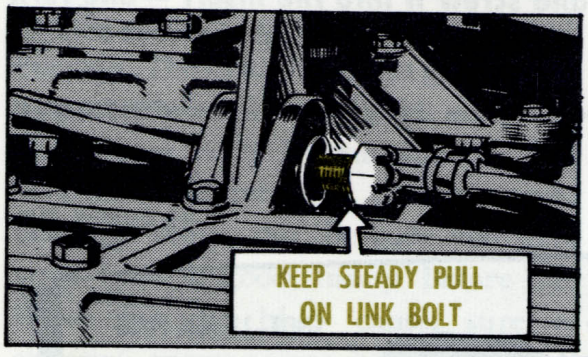

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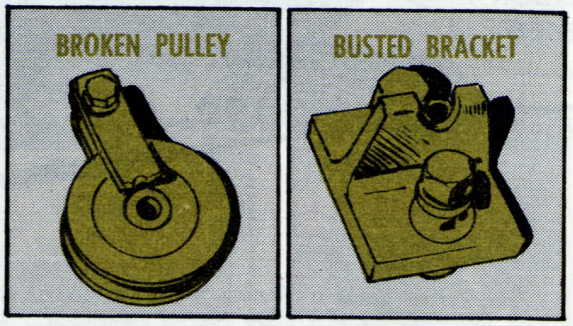
OVER CRANKING CAUSES . . .



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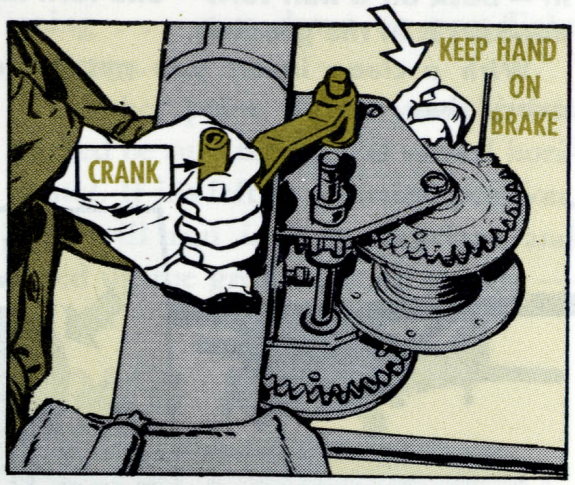


away with your right hand. When you finish cranking, put the brake on by pushing your left hand forward, sure 'nuff.

To swing the hoist be sure the area is clear and, again, use both hands on the pivoting bar.

CLEAN YOUR SPARK PLUG INSERTS

Dear Editor,

Anytime you use more than hand pressure to put a spark plug into a jug you can wind up with an under-torqued plug and, after awhile, a loose plug . . . 'taint a healthy situation!!

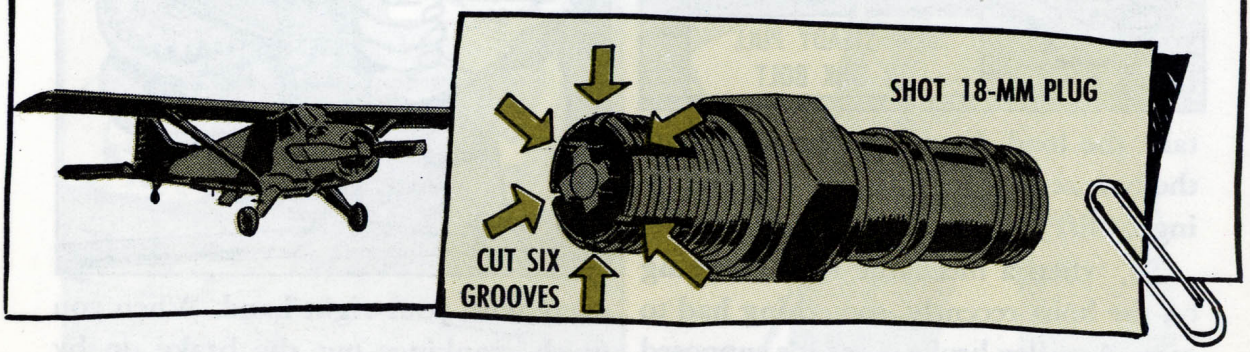
That's what happened to our Beaver (U-6) when carbon hardened in the brass spark plug insert. Although the torque wrench read right the carbon prevented the plug from getting tightened enough. So, we made up a little cleaning tool that works like a charm on solid inserts. Of course, the tool's not used on heli-coil inserts because you might damage the threads or loosen the insert.

We took a shot 18-mm plug and cut 6 grooves in it—cutting thru the first thread and decreasing the depth to zero half-way up the threaded barrel.

Now, when a plug doesn't go into the cylinder with hand pressure we reach for this gem, put a little grease on it and screw it into the insert — one turn in — back off a half turn — one turn in. . . . The tool picks up the carbon and deposits it in the grooves.

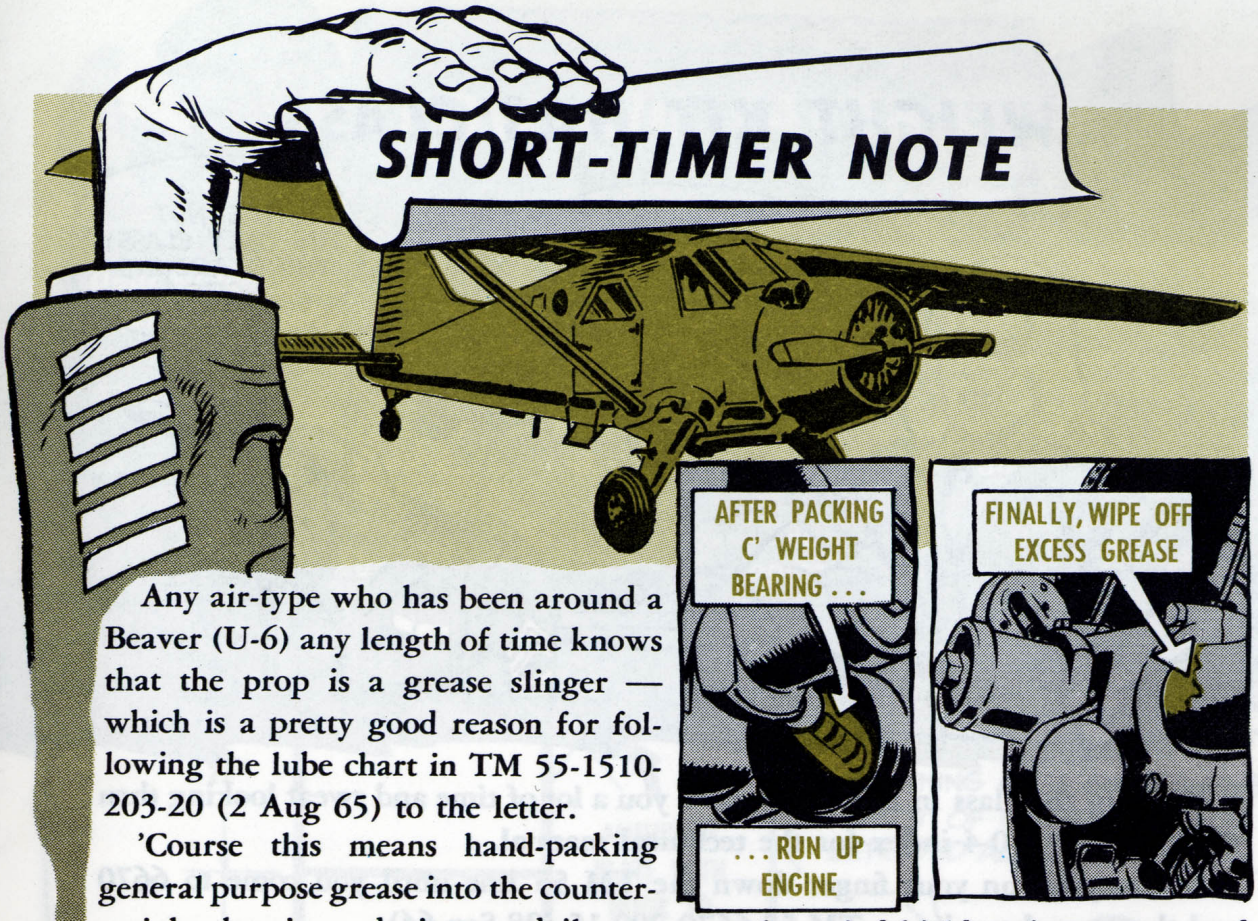
With a clean insert you get a free-running plug and the right torque, every time.

Wade Briggs
Ft Eustis, Va.



(Ed Note — Looks like a good tap, especially if you're in the boonies and you don't have the tap in your spark plug cleaning kit handy. Just be sure you set the piston at top dead center and take out the opposite spark plug. Then you can use compressed air to blow out carbon that might have fallen into the cylinder.)

SHORT-TIMER NOTE



Any air-type who has been around a Beaver (U-6) any length of time knows that the prop is a grease slinger — which is a pretty good reason for following the lube chart in TM 55-1510-203-20 (2 Aug 65) to the letter.

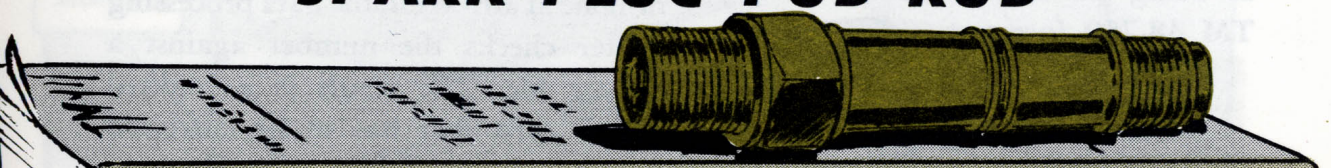
'Course this means hand-packing general purpose grease into the counterweight bearings during a daily on props without spinners (Intermediate — with spinners) and into the counterweight thrust bearings every second Periodic. The blade bushings get the gun treatment with low and high temperature grease every Intermediate.

When you lube the counterweight bearings daily, tho, be sure you give your bird a good runup before she heads for the blue 'cause, sure as shootin', excess grease is going to land on the windshield, wing struts and landing gear.

Then you can wipe off the excess grease so the pilot can see where he's going . . . cuts down on post-flight writeups.

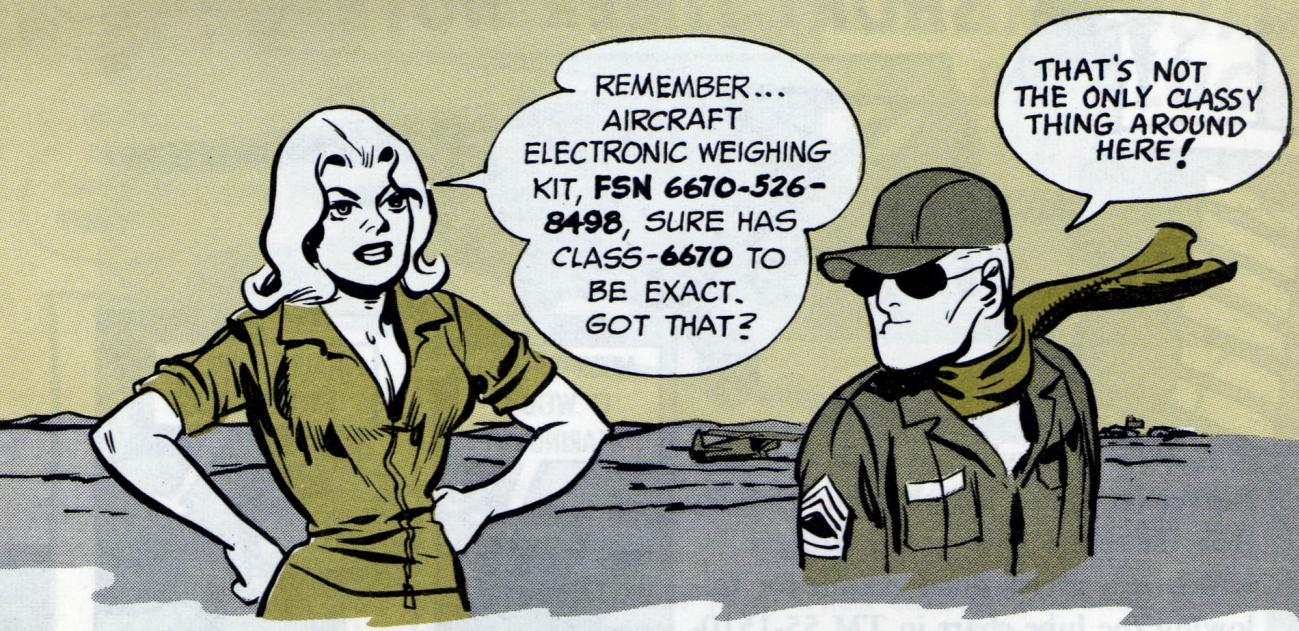
Another point. When your bird is parked be sure the prop is turned horizontal. If it's left in a vertical position, rain will run into the bearings and speed up the grease exiting process — for real!

SPARK PLUG PUB RUB



You say that the pub for your spark plug cleaning kit, FSN 4910-786-9271, in the aircraft organizational A Supplemental, B and C Tool Kits has become a collector's item? OK, then just order a replacement pub on a DA Form 17. You want TM 9-4910-422-12 (11 Jun 64) Kit, Spark Plug Cleaning.

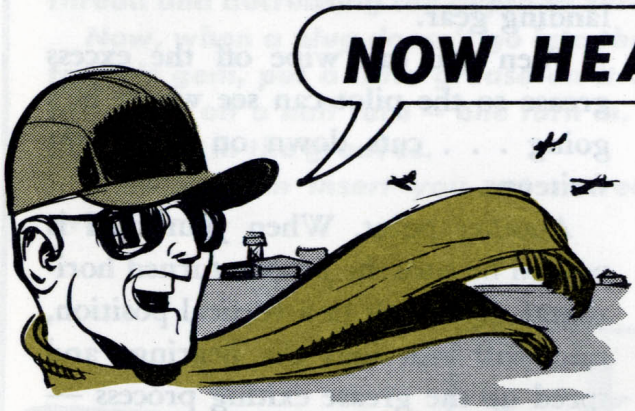
WEIGHT KIT HAS CLASS



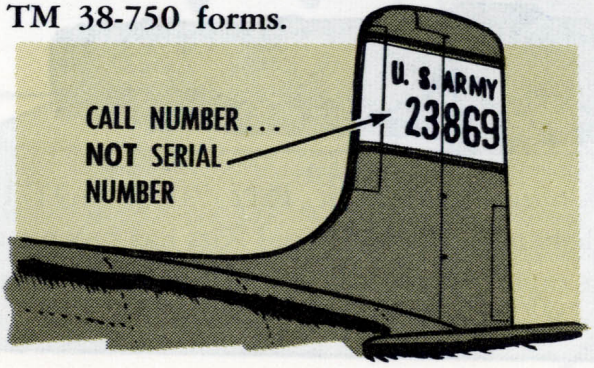
Keeping the class in mind will save you a lot of time and sweat looking thru the DA Pam 310-4 index for the technical manual.

Like—you run your finger down the TM 55 line until you come to 6670 and there you have it . . . TM 55-6670-200-15 (28 Sep 64).

NOW HEAR THIS!



Hold one before you list the radio call number on the tail of your aircraft as being the serial number for your TM 38-750 forms.



True, the call number is taken from the serial number on the bird data plate as called for in TB AVN 7, Change 5 (8 Feb 66) para 76. But the call number is not the serial number and there has been a lot of rejected info to prove the point.

What happens when a form goes forward with a bogus serial number, or none at all? Well, the data processing center checks the number against a master file. The result is a rejected punch card that has to be corrected (ugh!!).

So, keep the straight poop flowing — letters, dashes, slashes, numbers — by copying the **whole** serial number off the data plate.

COWLING SAVER

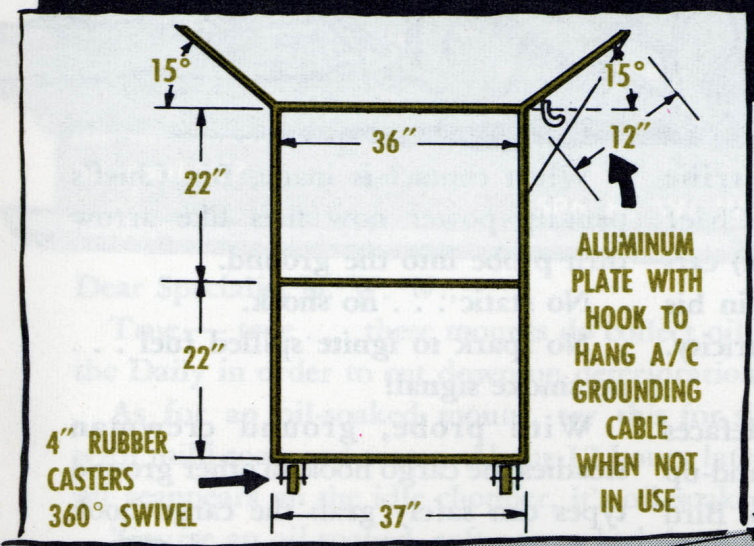
Dear Editor,

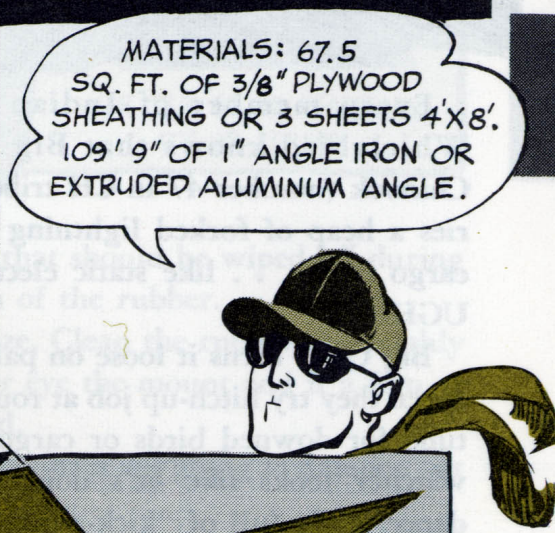
Cowling really takes a beating when it's taken off an aircraft and laid on pavement, believe you me!! The bigger the bird the more pieces that can get damaged.

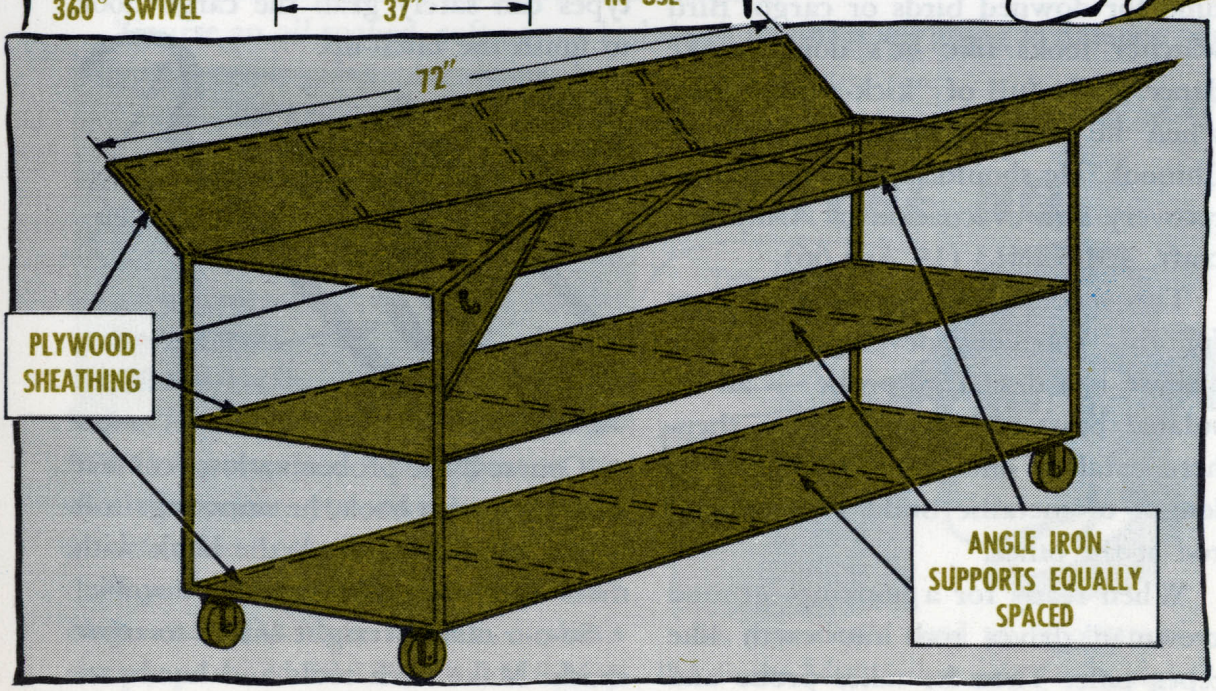
Well, that's the way it was here until we made up a couple of cowl racks. To put them together we welded the angle iron together and bolted in the sheets of plywood.

No more cowling stomped on, tripped over and scattered to the four corners of the hangar for us . . . not with these nifty portable racks handy.

John A. Setelin
Ft Eustis, Va.







(Ed Note — Looks real good for cutting down on sheet metal repairs.)

Every member of Indian tribe Whirlybird knows that Big Chief Chinook (number 47 in CH tribe) carries a heap of forked lightning in his cargo hook . . . like static electricity. UGH!

Big Chief turns it loose on palefaces when they try hitch-up job at round-up time for downed birds or cargo. Bird watcher looks like he's doing snake dance while full of "kick-a-poo" juice when he touches hook in belly of Chinook. He should have look-see into recovery and evacuation of Army aircraft, TM 55-413 (19 Apr 66).

This paleface pub has sure-fire cure for this shocking development. The answer is a discharge probe — an insulated brass rod shaped like a shepherd's staff at one end and joined by a length of metallic braid to a ground rod at the other.

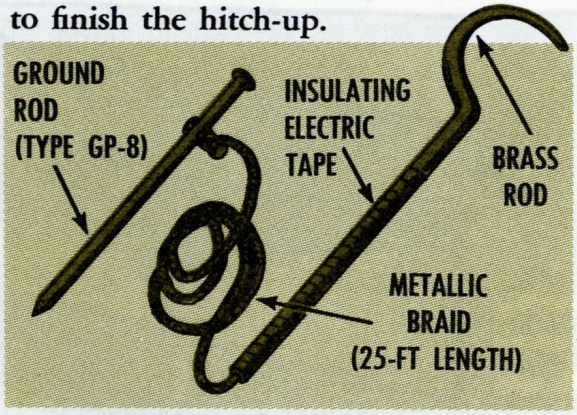
When ready for a hook-up, ground crewman drives rod into earth like tepee pole. Then he takes probe and catches cargo hook.

When contact is made, Big Chief's pent-up power now flies like arrow thru probe into the ground.

No static . . . no shock.

No spark to ignite spilled fuel . . . no smoke signal!

With probe, ground crewman steadies the cargo hook so other ground types can safely grab the cargo hook to finish the hitch-up.



'Course if the probeman loses contact with the cargo hook, he must regain it before the others touch the hook with their hands — otherwise . . . zowie!

So-o-o make straight tracks to tepee shack. Make with tools and hardware quick-like and fixum probe, hokey?

OIL-SOAKED SHOCKS SHOT

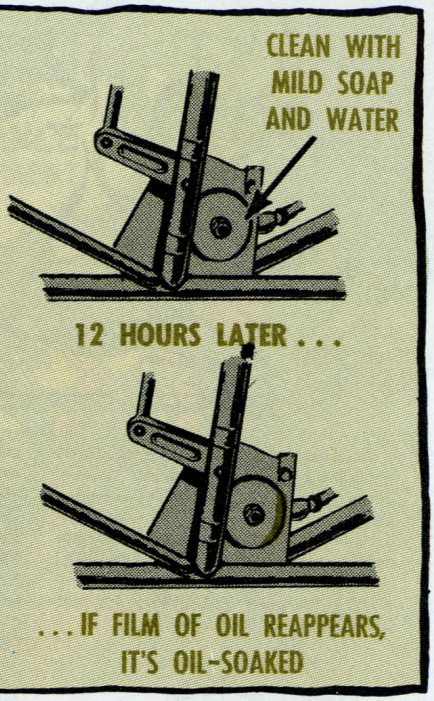
Dear Windy,

On a Periodic we inspect our Sioux (OH-13) engine sprag shock mounts to see if the rubber is shot but there is one check that has us baffled.

TM 55-1520-204-20 (1 Jun 65) chap 5, sect II, para 5-18 says to check the rubber for cracks and for being oil-soaked or deteriorated.

Since there seems to be oil on these babies all the time, how do you tell when they're oil-soaked?

SP6 H. W. W.



Dear Specialist H. W. W.,

True — true . . . these mounts do collect oil that should be wiped off during the Daily in order to cut down on deterioration of the rubber.

As for an oil-soaked mount, try this for size. Clean the rubber thoroughly with mild soap and water. About 12 hours later eye the mount and if a film of oil reappears on the idle chopper, it's oil-soaked.

'Course an oil-soaked, soft or cracked shock mount is not going to dampen out vibrations so it gets replaced, sure 'nuff.

Windy

MAYBE YES — MAYBE NO

Are you short a DA Form 2408-5 on an aircraft component? Well, maybe . . . maybe not.

The surest way is to check the index, DA Pam 310-4. If you locate an MWO or one-time TB inspection on the component, you ought to have a modification record.

If you find no such pub, you don't even need a DA Form 2408-5 . . . that's the poop in TM 38-750, Ch 2 (18 May 65) para 4-9b(1) and para 4-26e.

So, you don't need to reconstruct a DA Form 2408-5 that never was, right? Right!

A selected list of recent publications of interest to Organizational Maintenance Personnel. This is a list compiled from recent Adjutant General's Distribution Center Bulletins. For complete details see DA Pam 310-4 with latest changes. The latest Indexes you need are DA Pamphlet 310-4 *(May 66) and* DA Pamphlet 310-6 *(Jul 66).*

TECHNICAL MANUALS

TM 1-CH47-5, Jun, CH-47.
TM 3-261, May, Handling and Disposal Radioactive Material.
TM 5-4310-260-15, Jun, Compress, 15 CFM, 175 PSI, Champion Pneum Mdl BM 452 ENG.
TM 5-4310-261-15, Jun, Compress, Rotary 60 CFM, 6.5 PSI Hoskins Mdl No. 65.
TM 5-4930-207-25P, May, Lube and Svc Unit: 23 CFM Compress, Henry Spen Mdl 901765-1.
TM 5-6115-271-25P, May, Gen Set, Gas Eng, 3KW (Less Eng) 400 Cycle (Mil Mdl HF 3.0 MD); 60 Cycle (Mil Mdl SF 3.0 MD); 28V (Mil Mdl DC 3.0 MD/28V).
TM 5-6115-365-15, May, Gen Sets, Gas and DED, Trailer-Mtd.
TM 9-1055-217-20, C2, Jun, Armament, RLXM3.
TM 9-1090-202-12, May, Rocket Launcher, High Rate, XM21.
TM 9-1290-200-15, May, Quadrant, Fire Contr (Gunner's).
TM 9-1430-375-12P/1, May, Pershing.
TM 9-1450-250-15P/3/1, Jun, Nike-Herc and Imp.
TM 9-2350-201-12, C9, Jun, M41A2, M41A3 Tanks.
TM 9-2350-202-20P, C1, Jun, M42, M42A1 SP 40-MM Guns.
TM 9-2350-203-20P, C2, Jun, M44, M44A1 Howitzers.
TM 9-2350-230-25P/1 and -25P/2, Jun, XM551 Veh.
TM 9-4910-471-10, Jun, Spark Plug Cleaner and Tester, Oiljack Mfg Co Mdl B800M.
TM 9-4935-306-15P/4/1, Jun, Sergeant.
TM 9-4935-455-15, May, ENTAC.
TM 9-6920-310-12P, Jun, Sergeant.
TM 10-3930-243-12, May, Forklift Truck, MHE 199.
TM 11-5815-228-25P, May TT Sets AN/TGC-5, -5A, -5X, -5AX, -5B, and -5BX.
TM 11-5820-348-15, May, Antenna Equip RC-292.
TM 11-5820-461-25P, May, Radio Sets AN/GRC-50 (V) 1, 2, 3, 4, and 5, and AN/GRC-50A (V) 1, 2, 3, 4, and 5.
TM 11-5820-590-25P, Jun, Radio Set AN/PRC-74.
TM 11-6625-476-15P, Jun, Adapter Set, Test AN/USM-119.
TM 55-1100-209-12-11, Jun, Davy Crockett.
TM 55-1100-212-12-11, Apr, Little John.
TM 55-510-204-20P, Jun, OV-1.
TM 55-1520-203-20PMD, Jun, CH-37.
TM 55-1520-203-20PMI, Jun, CH-37.
TM 55-1520-203-20PMP, Jun, CH-37.
TM 55-1520-204-20, Jun, OH-13.
TM 55-1520-209-10, Jun, CH-47.
TM 55-1520-210-20PMI, Jun, UH-1D.
TM 55-1520-210-20PMP, Jun, UH-1D.
TM 55-1520-211-20PMD, Jul, UH-1A-1B.
TM 55-1520-211-20PMI, Jul, UH-1A-1B.
TM 55-1520-211-20PMP, Jul, UH-1A-1B.

MODIFICATION WORK ORDERS (ALL NORMAL)

MWO 9-1000-213-30/14, Jul, M60, M60A1 Tanks.
MWO 9-1000-246-30/1, Jul, M2 .50-cal MG.
MWO 9-1005-243-20/3, Jun, 7.62MM MG, Quad, M6.
MWO 9-1240-258-30/1, Jul, M48A2, M48A2C, M60, M60A1 Tanks.
MWO 9-1430-254-30/1/6, Jun, Nike-Herc and Imp.
MWO 9-1440-250-30/39, C2, Jun, Nike-Herc and Imp.
MWO 9-2300-216-20/7, Jun, M107 Gun and M110 Howitzer.
MWO 9-2300-216-30/12, /13, Jun, M107 Gun and M110 Howitzer.
MWO 9-2300-217-30/14, Jul, M107 Gun and M110 Howitzer.
MWO 9-2300-224-20/18, Jun, M106 Mortar Instal Base Plate Stowage Lock Assy.
MWO 9-2350-217-30/6, Jul, M109 Howitzer.
MWO 9-4940-252-30/1/33, Jul, Nike-Herc Imp.
MWO 55-1500-200-20/4, Aug, UH-1A-1B, UH-1D.
MWO 55-1500-200-30/30, Aug, UH-1A-1B and UH-1D.
MWO 55-1510-202-30/1, Jun, O-1A.
MWO 55-1510-206-20/5, Aug, CV-2.
MWO 55-1510-206-30/3, Jul, CV-2.
MWO 55-1510-206-34/56, C1, Jul, CV-2.
MWO 55-1510-206-34/68, Aug, CV-2.
MWO 55-1520-202-34/27, Aug, CH-34.
MWO 55-1520-209-30/4, Jul, CH-47.
MWO 55-1520-209-30/18, Jul, CH-47.
MWO 55-1520-209-34/29, Jul, CH-47.
MWO 55-1520-209-34/116, Jun, CH-47.
MWO 55-1520-209-34/131, Jul, CH-47.
MWO 55-1520-209-34/137, Jul, CH-47.
MWO 55-1520-210-30/10, Jun, UH-1D.
MWO 55-1520-211-30/2, Jun, UH-1A-1B.

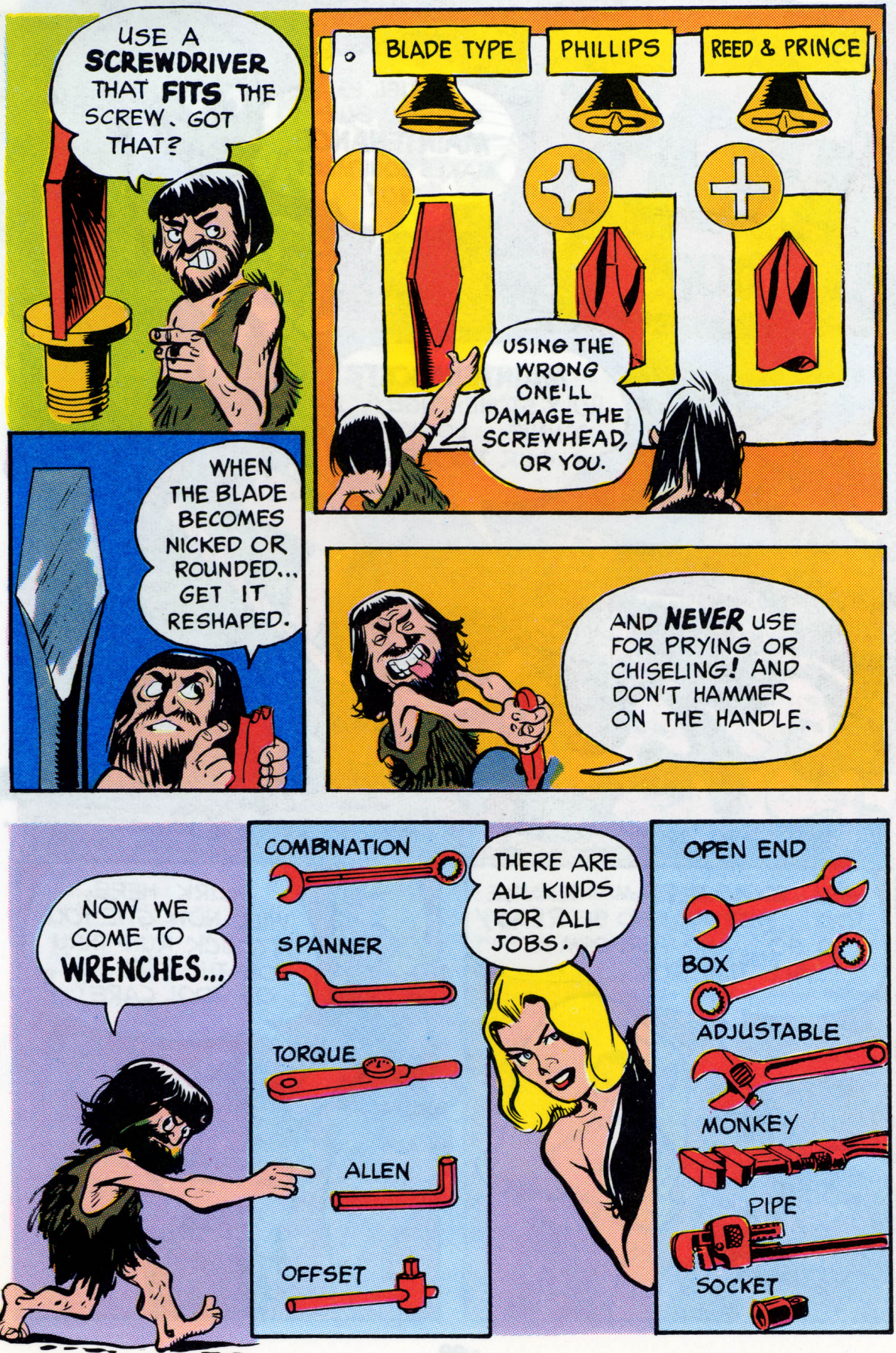
TECHNICAL BULLETINS

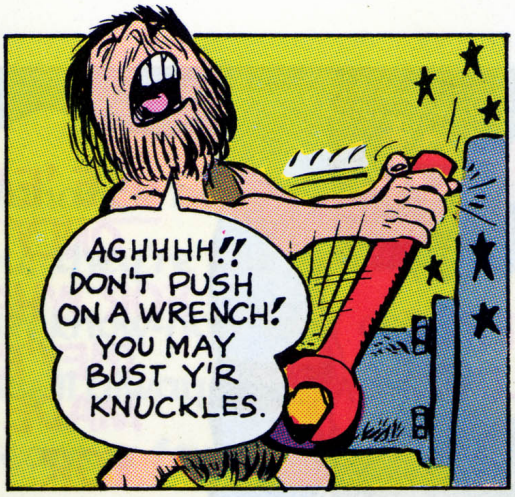
TB 9-1000-200-15/10, Apr, EIR Digest (Weapons).
TB 9-1400-399-10, May, Missile and Rocket EIR Digest.
TB 11-6625-692-15/2, Jun, Calibration.
TB 34-9-216, May, Aircraft Hydraulic Sys Serv.
TB 34-9-217, Jun, Diameters for Aircraft Gravity Filling Orifices.
TB 34-9-218, Jun, Symbol Marking of Aircraft Serv Points.
TB 55-1510-202-34/1, Jun, O-1.
TB 55-1520-206-20/7, Aug, OH-23.
TB 55-1520-211-20/7, Aug, UH-18.

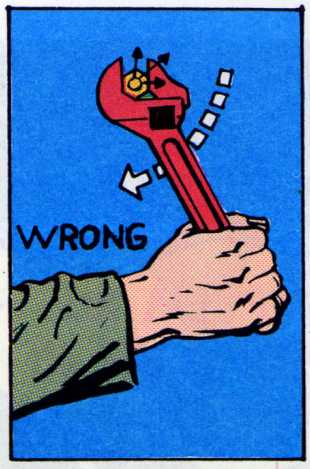
MISCELLANEOUS

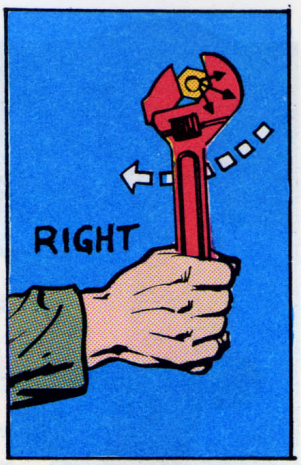
LO 5-2420-206-15-1, May, Wheeled Tractor Clark Mdl 290M.
LO 5-6115-344-15, May, Gen Set, 2KW, DC, 15V Hollingsworth Mdl JHGV2C.
TB AVN, 23-65, May, All Aircraft.
TC 1-18, Jun, OV-1.
TC 1-28, Jul, O-1, OH-13, -23, and -6A.

JOE'S DOPE
FUEL IS COOL ... BUT MAINTENANCE MAKES EQUIPMENT GO!
MAINTENANCE?? HOLY STONEHENGE, CONNIE ... LOOKIT OUR TOOLS!
WELL, TOOLS NEED MAINTENANCE TOO... THEY HAVE TO BE READY TO GO... AND PERFORM AT ALL TIMES!
GLURK, HERE, WILL NOW GIVE YOU A QUICK RUN-THRU ON THE ART OF TOOL CARE!


USE A SCREWDRIVER THAT FITS THE SCREW. GOT THAT?
BLADE TYPE
PHILLIPS
REED & PRINCE
USING THE WRONG ONE'LL DAMAGE THE SCREWHEAD, OR YOU.
WHEN THE BLADE BECOMES NICKED OR ROUNDED... GET IT RESHAPED.
AND NEVER USE FOR PRYING OR CHISELING! AND DON'T HAMMER ON THE HANDLE.
NOW WE COME TO WRENCHES...
COMBINATION
SPANNER
TORQUE
ALLEN
OFFSET
THERE ARE ALL KINDS FOR ALL JOBS.
OPEN END
BOX
ADJUSTABLE
MONKEY
PIPE
SOCKET







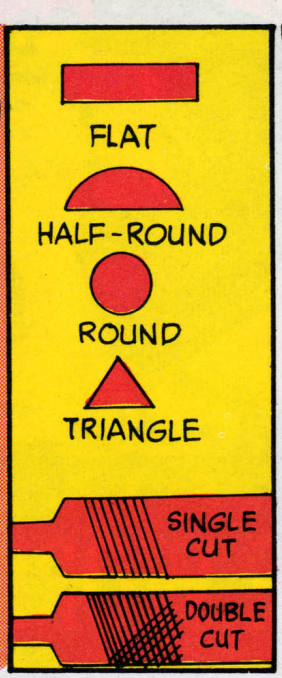
NEVER TRY TO ENLARGE A HOLE BY TIPPING DRILL

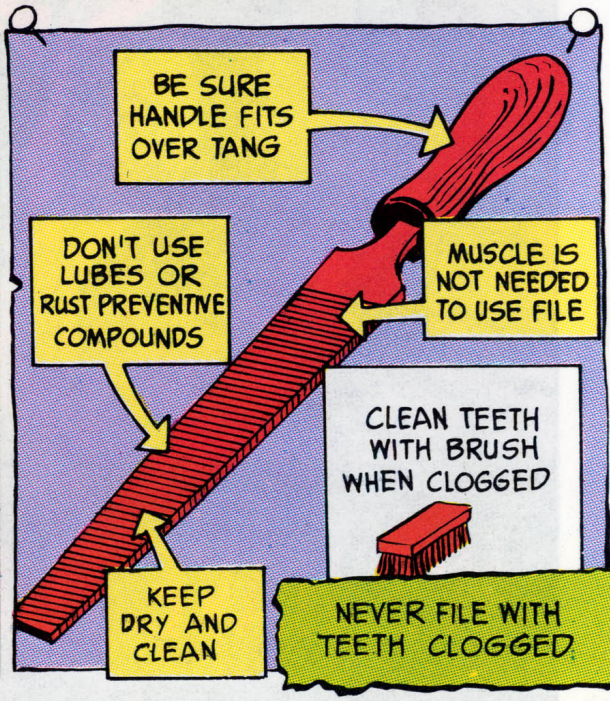
NEVER LET BIT OVERHEAT... **(USE CUTTING OIL)**

NEVER DRILL WITH A LOOSE CHUCK, BIT MAY BREAK

NEVER THROW BITS IN TOOL BOX, YOU'LL DULL THE EDGES.

PM TIPS KEEP 'EM CLEAN AFTER USING





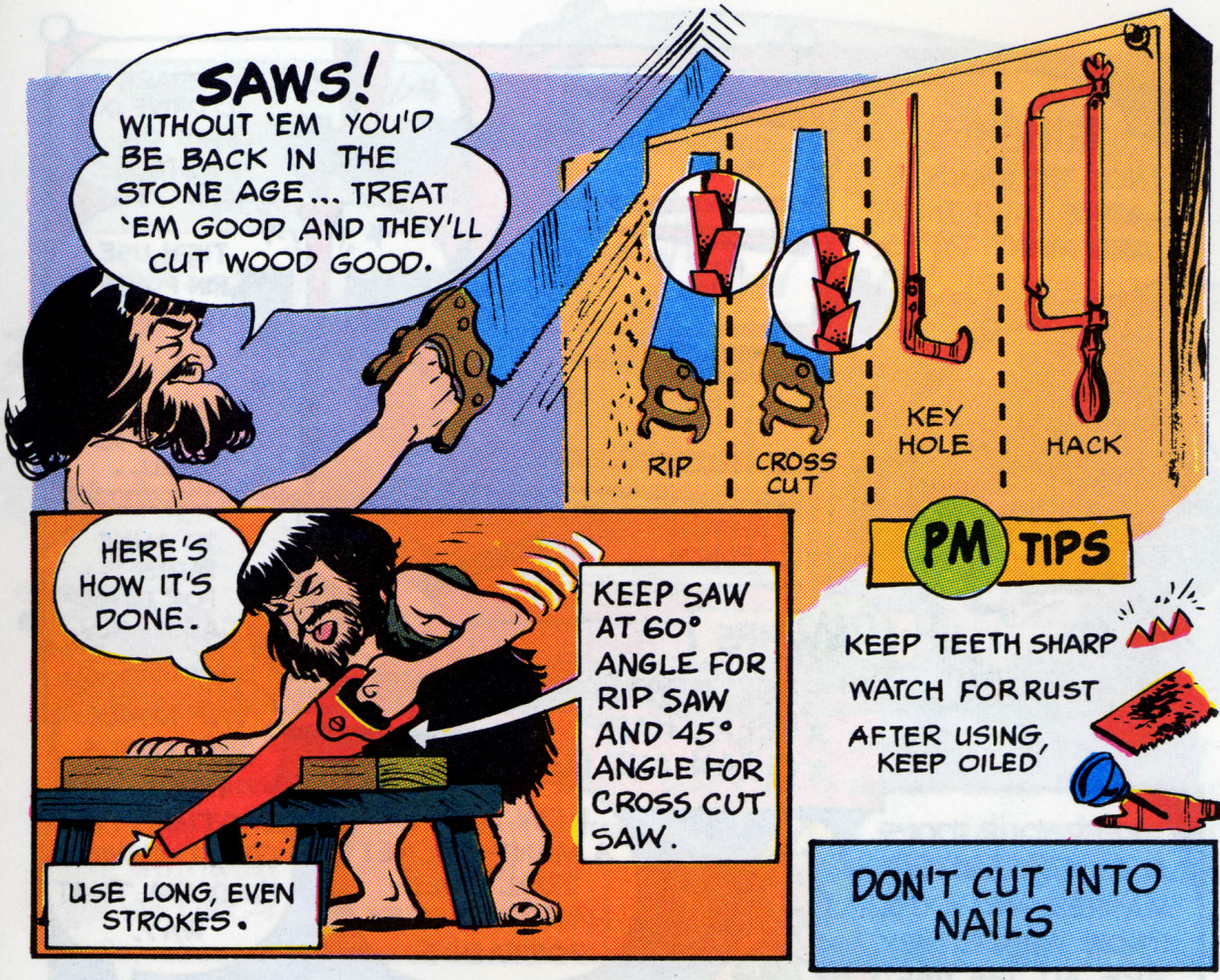
IF YOU WANT TO DISPLAY THIS CENTERPIECE ON YOUR BULL

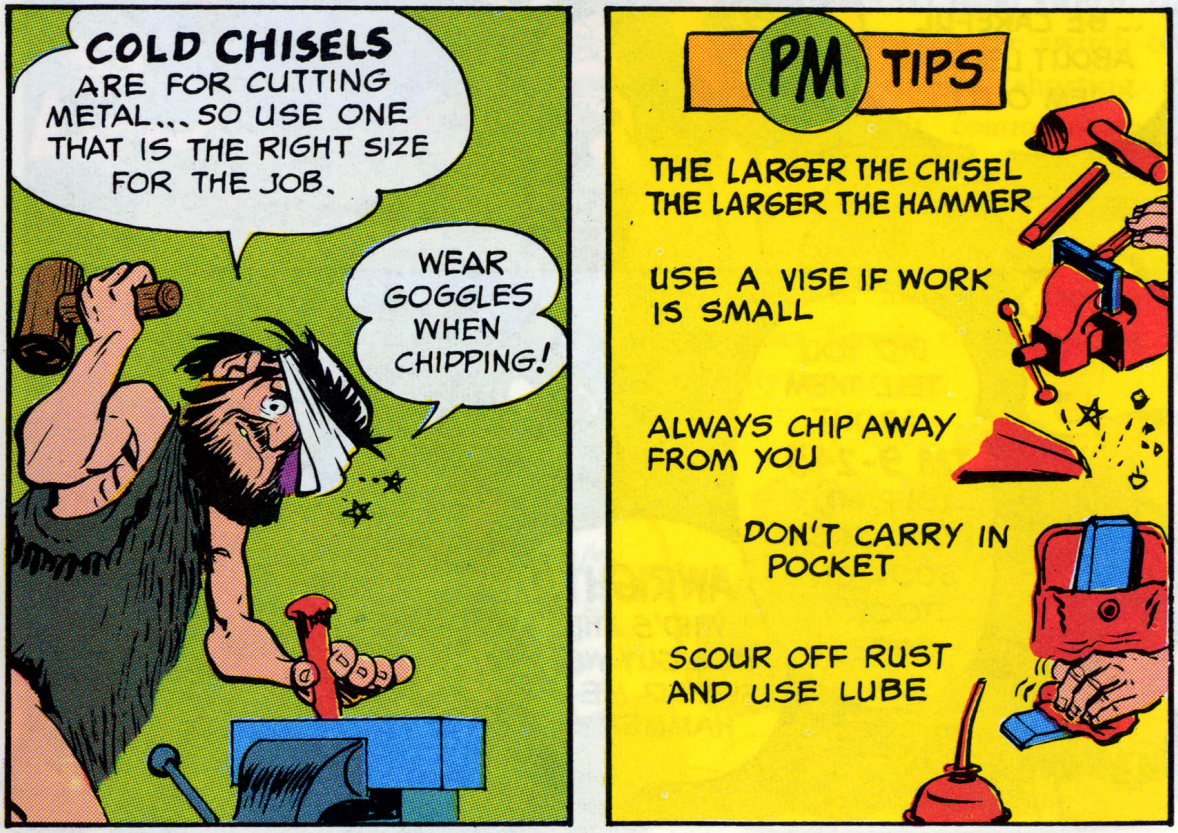
IF YOU WANT TO DISPLAY THIS CENTERPIECE ON YOUR BULLETIN BOARD, OPEN STAPLES, LIFT IT OUT AND PIN IT UP.

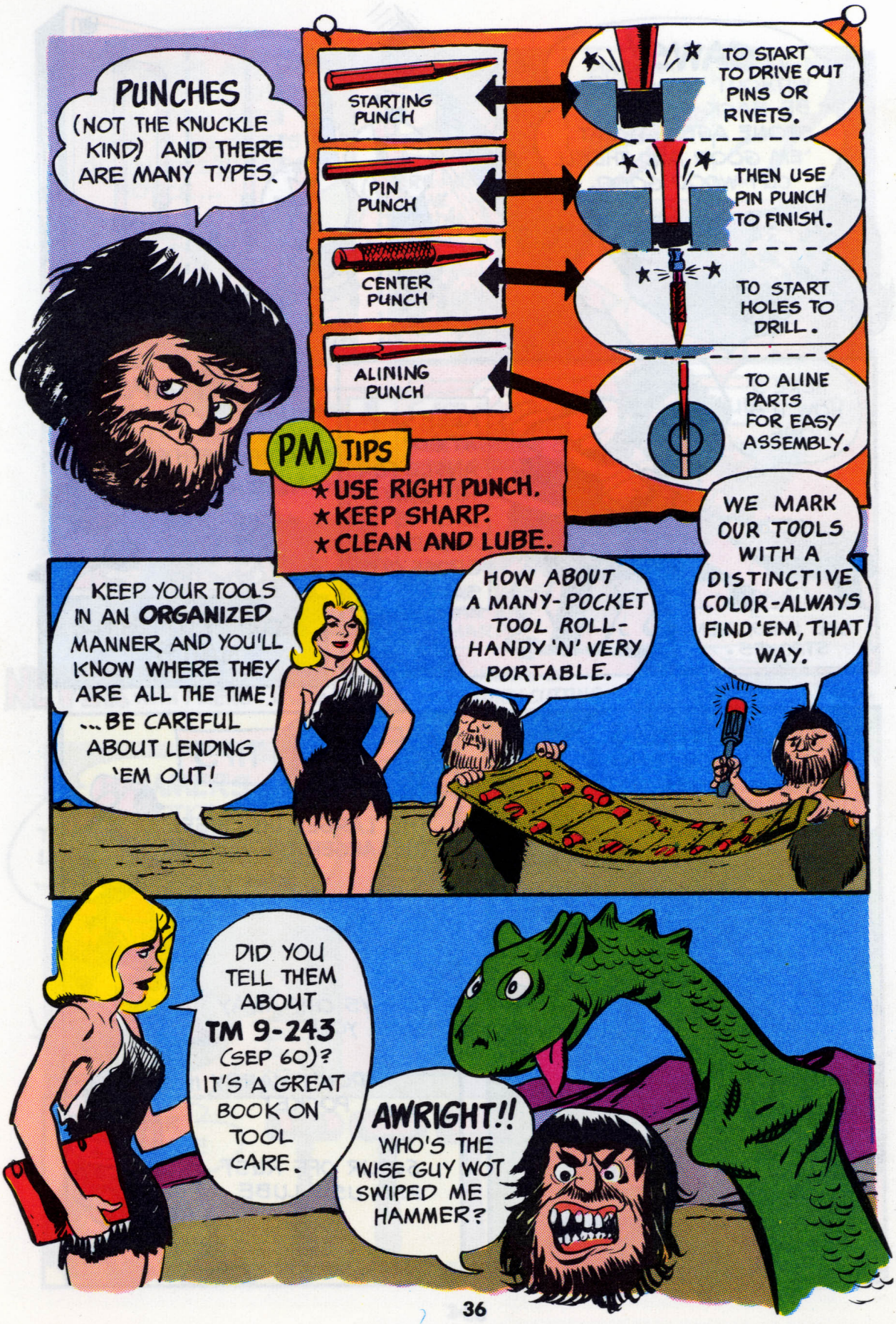
UIPMENT . . . Take care of it

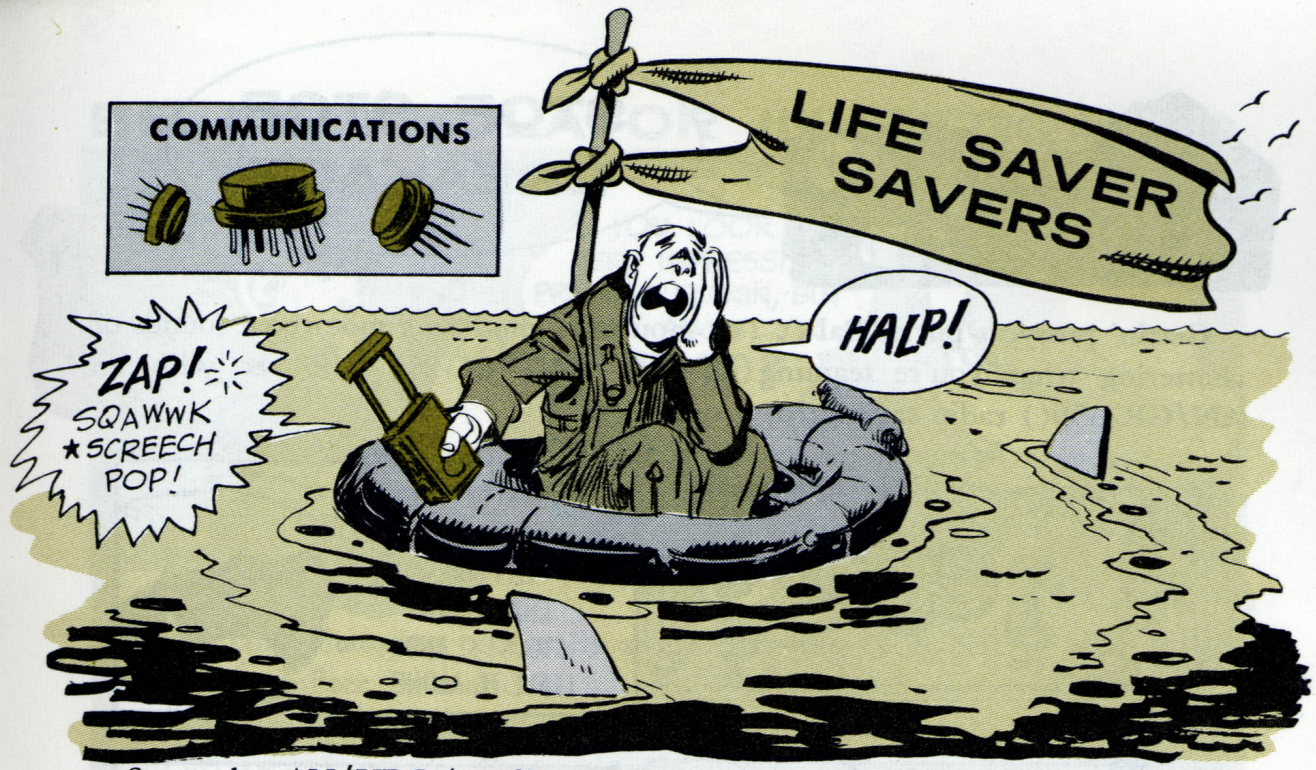
ETIN BOARD, OPEN STAPLES, LIFT IT OUT AND PIN IT UP.

PLIERS ARE USED LIKE A THIRD HAND. THEY ALSO COME IN ALL SORTS OF SHAPES 'N' SIZES... NOTICE...
COMBINATION
DIAGONAL OR "DIKES"
NEEDLE-NOSE
HERE ARE SOME COMMON ONES.
FUNCTIONS
GRIPPING
CUTTING
BENDING
THAT'S ALL, HUH!
NOPE...HERE ARE SOME HELPFUL HINTS... LOOK OVER THAR.
FOR ELECTRICAL WORK, USE TAPE ON HANDLES OR INSULATED GRIPS.
LUBE LIGHTLY
CHECK JOINT FOR TIGHTNESS AND LUBE.
KEEP JAWS CLEAN AND SHARP.
NEVER TURN BOLTS WITH PLIERS
NEVER FACE INSIDE OF JAWS WHEN CUTTING
HAMMERS
OBOY...NOTICE MY THUMBS...BUT PROPERLY USED, Y'CAN'T BEAT 'EM ...TAKE THIS BALL PEEN.
THE FLAT END IS FOR HAMMERING- THE BALL END FOR RIVETING.
GRIP HAMMER TOWARDS END OF HANDLE FOR FULL FORCE BLOW.
OTHER TYPES ARE
PLASTIC TIP
BRASS
RAWHIDE
PM TIPS
HEAD TIGHT?
HANDLE CRACKED?
KEEP CLEAN AND DRY


SAWS!
WITHOUT 'EM YOU'D BE BACK IN THE STONE AGE... TREAT 'EM GOOD AND THEY'LL CUT WOOD GOOD.
RIP
CROSS CUT
KEY HOLE
HACK
HERE'S HOW IT'S DONE.
KEEP SAW AT 60° ANGLE FOR RIP SAW AND 45° ANGLE FOR CROSS CUT SAW.
USE LONG, EVEN STROKES.
PM TIPS
KEEP TEETH SHARP
WATCH FOR RUST
AFTER USING, KEEP OILED
DON'T CUT INTO NAILS


COLD CHISELS ARE FOR CUTTING METAL... SO USE ONE THAT IS THE RIGHT SIZE FOR THE JOB.
WEAR GOGGLES WHEN CHIPPING!
PM TIPS
THE LARGER THE CHISEL THE LARGER THE HAMMER
USE A VISE IF WORK IS SMALL
ALWAYS CHIP AWAY FROM YOU
DON'T CARRY IN POCKET
SCOUR OFF RUST AND USE LUBE


PUNCHES
(NOT THE KNUCKLE KIND) AND THERE ARE MANY TYPES.
STARTING PUNCH
TO START TO DRIVE OUT PINS OR RIVETS.
PIN PUNCH
THEN USE PIN PUNCH TO FINISH.
CENTER PUNCH
TO START HOLES TO DRILL.
ALINING PUNCH
TO ALINE PARTS FOR EASY ASSEMBLY.
PM TIPS
★USE RIGHT PUNCH.
★KEEP SHARP.
★CLEAN AND LUBE.
KEEP YOUR TOOLS IN AN ORGANIZED MANNER AND YOU'LL KNOW WHERE THEY ARE ALL THE TIME! ...BE CAREFUL ABOUT LENDING 'EM OUT!
HOW ABOUT A MANY-POCKET TOOL ROLL-HANDY 'N' VERY PORTABLE.
WE MARK OUR TOOLS WITH A DISTINCTIVE COLOR-ALWAYS FIND 'EM, THAT WAY.
DID YOU TELL THEM ABOUT TM 9-243 (SEP 60)? IT'S A GREAT BOOK ON TOOL CARE.
AWRIGHT!! WHO'S THE WISE GUY WOT SWIPED ME HAMMER?



Sure, the AN/URC-4 radio set is being replaced by an improved AN/URC-10, but until then, you've gotta live with what you've got, and you've got the URC-4.

So, about once a month minimum would be a good time to check the set's battery for leaks, corrosion and output. If it's not in good shape, replace it.

While you're checking the battery, you might inspect the set screws in the three controls on the side of the set — the tone, receiver and transmitter push-buttons.

The set screws work loose, and, ahem, you lose control.

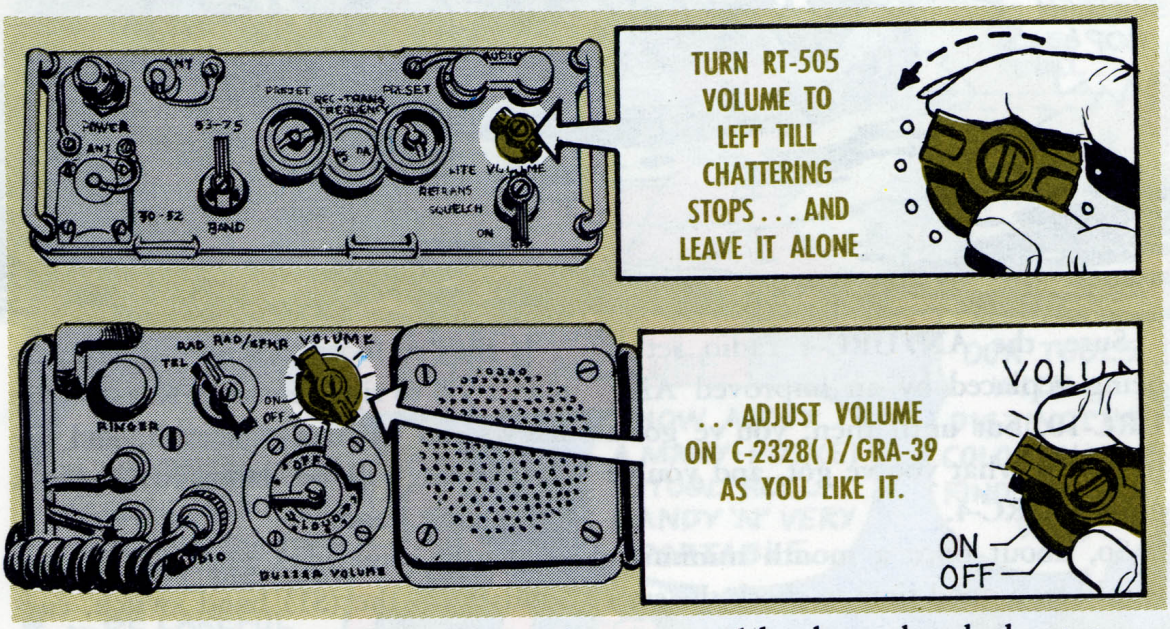
If they're loose, it's the unit repairman's job to tighten them. Reason: the screws can be over-tightened, and the equipment will be damaged. It takes a knowing hand.

Finally, sometimes when you change bands with the (S1) band switch, current will arc between the switch contacts and the chassis, shorting the switch. You can't communicate, of course.

Hold the sweat. There's an easy fix, since either you or your repairman can put a piece of insulating tape across the contact (inside the case, that is). Naturally, no arcing.

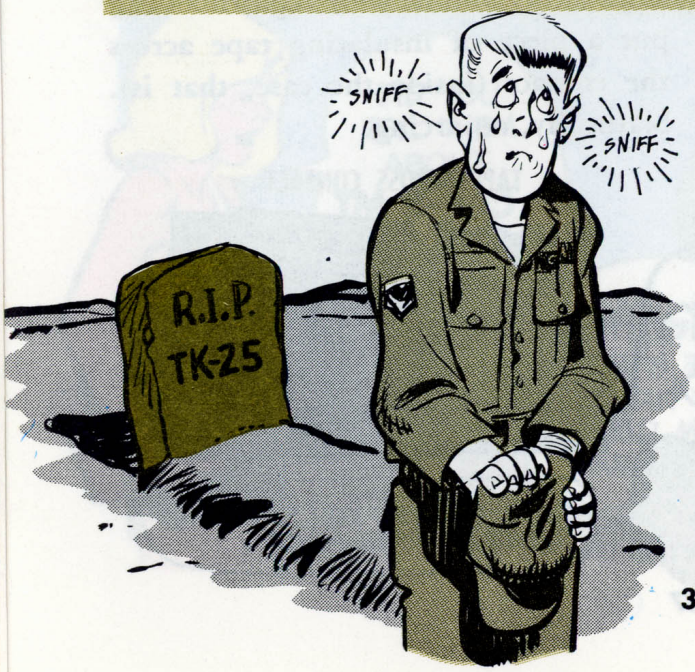
STOP STOP BREAKAGE

Gettin' pussycat purrs, Pal . . . or mournful, muddling motorboat sounds or chattering when you're teaming up your AN/PRC-25 radio set with an AN/GRA-39( ) radio set control group?



Too much twisting on the RT's volume control knob can break the stop . . . besides filling your head with sour sounds.

TK-25 TOOL KIT BOWS OUT



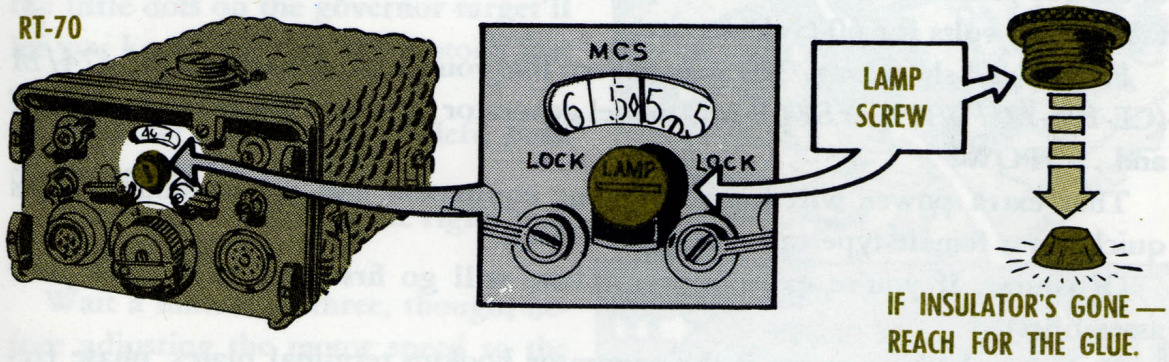
Don't panic if you can't find the TK-25/GF (FSN 5180-408-1892) listed in the latest supply catalogs. It's been deleted on purpose and has been replaced by Tool Kit, Motion Picture, LS-52 (FSN 5180-078-4810). You'll find that one on page 4.87 of Fed Cat C5180-IL-A (1 Jul 66). Don't turn in your TK-25's, though. You replace them, as needed, with the LS-52. It'd pay to grab a look at SB 11-561 (Feb 64) on conversion of the TK-25 to the LS-52.

BE AN INSULATOR INVESTIGATOR

When lamp-changing time rolls around for the MCS dial of your RT-70 receiver-transmitter, be cautious.

Chances are, an almost invisible insulator in the recess of the lamp screw will try to get away from you. Be watchful.

The glue on the back of the insulator dries out, and the insulator can drop



IF INSULATOR'S GONE — REACH FOR THE GLUE.

without you seeing it. Worse, since it's transparent, you've got to look three times before you can tell it's missing. Be persistent.

Otherwise, pretty quick after you replace the lamp screw you'll know the insulator is not there. Like, just about as soon as you turn the power on.

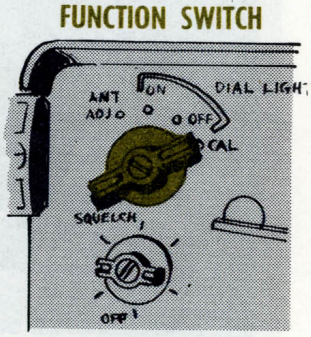
Without the protection, the lamp screw shorts the filament voltage to ground . . . which sends your set off for repairs.

Naturally, that does not put much light in the dial window.

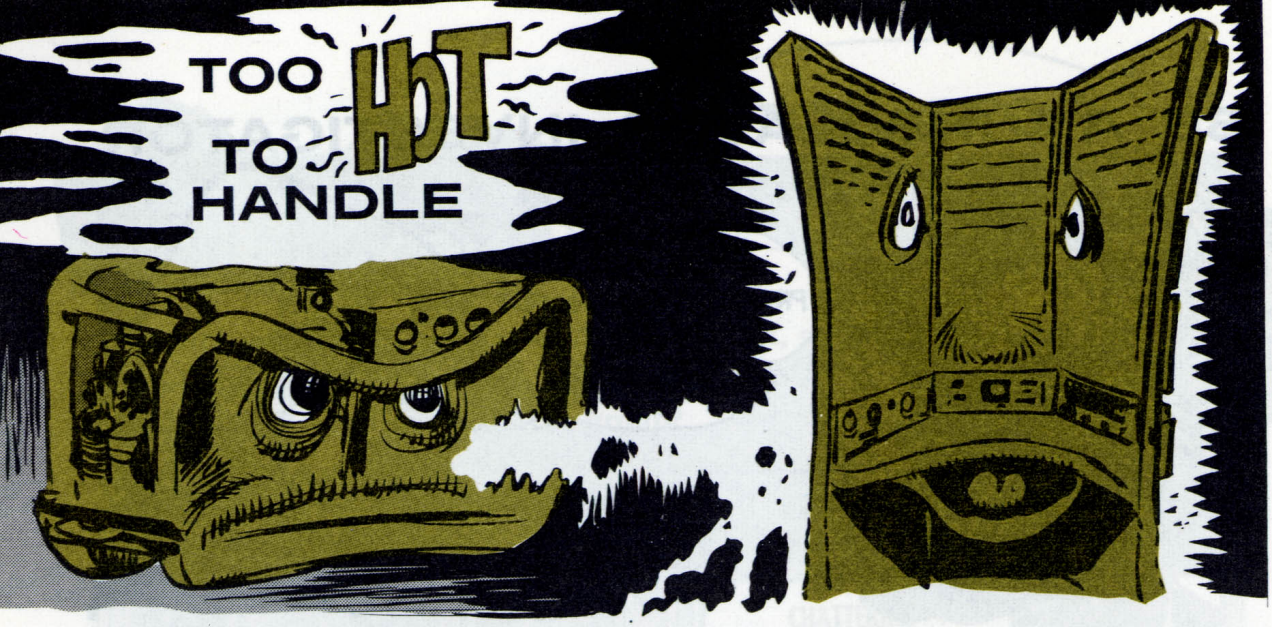
A burned-out lamp can give you other problems. F'rinstance, if the lamp's shot and you turn the RT's function switch to CAL position, you trip the thermal relay in the power supply.

The set will stop operating . . . but no sweat on the fix.

Turn the set off. Let it cool for a minute or two. Turn it on. It should work fine . . . and if you replace the lamp you can even turn it back to CAL.



IF RELAY TRIPS . . . TURN SET OFF



Whoa! . . . Holdup! . . .

Before you turn the juice loose from the generator set into your communications equipment make sure the voltage is hooked up right for the load your equipment will handle.

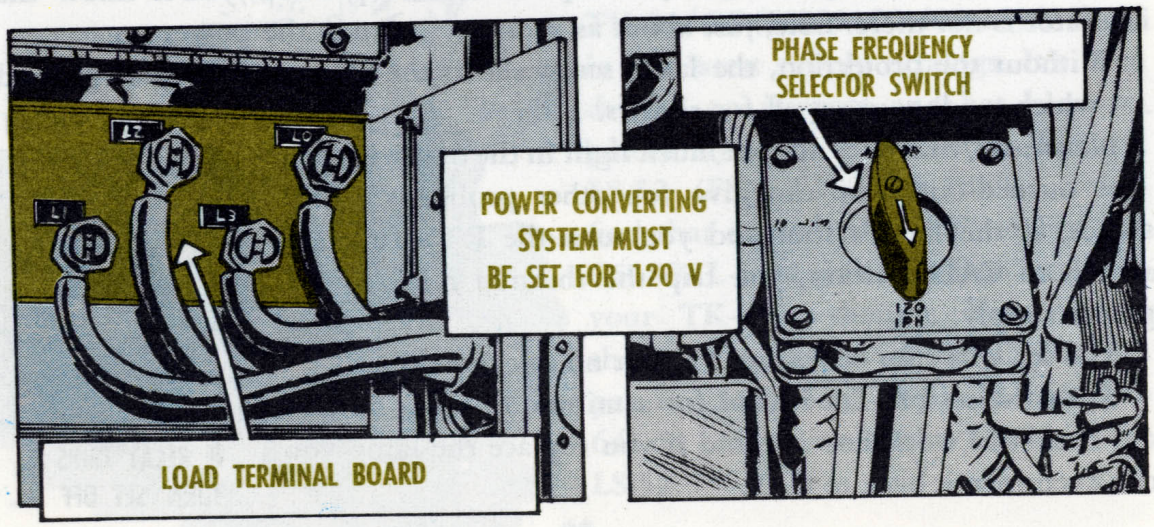
Take, f'rinstance, the AN/MCC-6 telegraph-telephone terminal, SB-675/MSC or SB-611 patching communication panel. About all the power any of 'em will take is 115 volts for 60-cycle service.

Forget, and shoot, say, 220 volts to 'em like you would get from a PU-474/M (CE-106-AC/WK9) or SF-10-MD model generator set which has multiple voltage and . . . POW!

That extra power will burn out your equipment and cut communications quicker'n a female-type can change her mind.

Of course, if you're extra lucky, a fuse will go first and SYA (save your assemblies).

Your best bet's to see to it the generator hookup terminal plates. phase frequency selector switch or whatever type power converting system is used is set for 120 volts on a 120/240 V multiple-voltage generator set.



HANDLE THAT TT WORM GENTLY

Ramming or jamming and jerking or tugging on your teletypewriter set's governor adjustment worm can keep the message coming in garbles.

That's right . . . .

So, your best bet's to gently push the worm in to speed up the motor or gently pull it out to slow 'er down on a set, like f'rinstance, a TT-4( )/TG or TT-76/GGC.

Tapping your tuning fork on the heel of your hand and eyeing one of the little dots on the governor target'll let you know whether the motor's fast or slow.

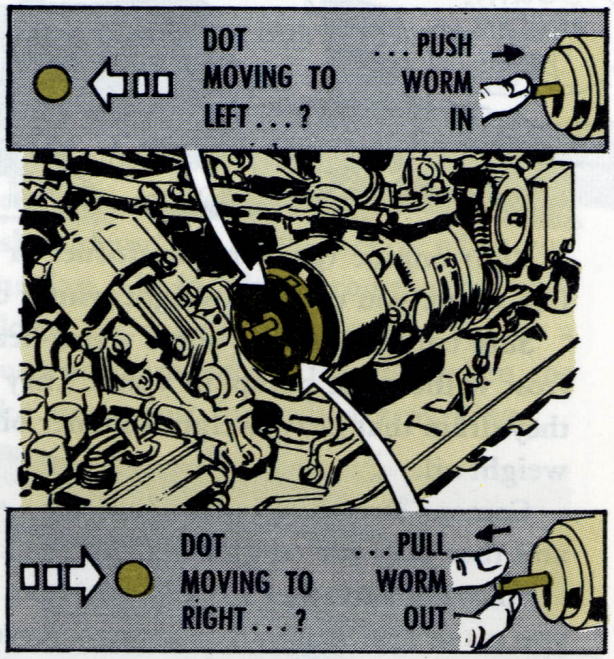
If the dot's moving to the left, push the worm in.

If the dot's moving to the right, pull the worm out.

Wait a minute or three, though, before adjusting the motor speed so the motor'll warm up.

And, remember, gently does it or you'll lock the governor worm spring and all the pushing and pulling won't get the motor geared for 60 WPM.

A locked spring means a trip to your support to free 'er.

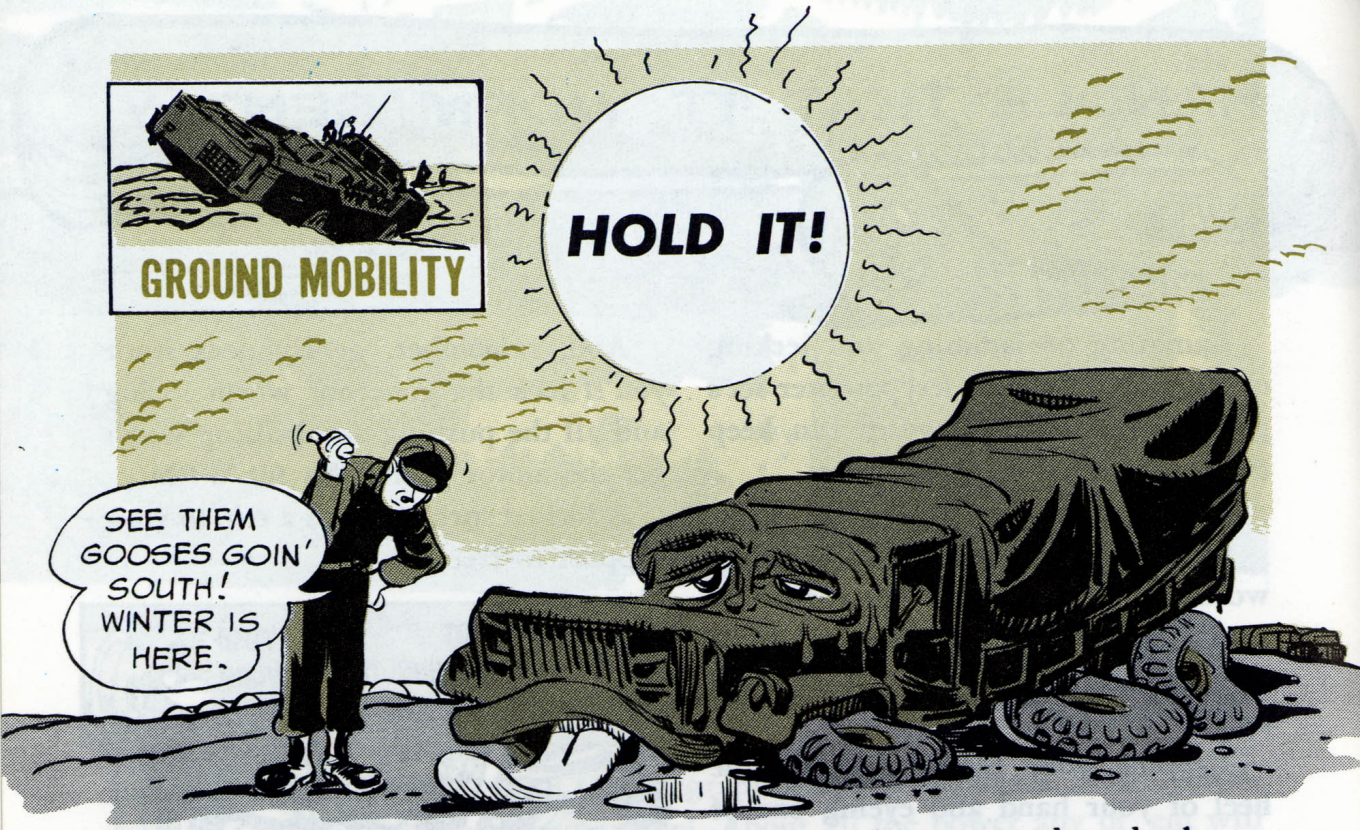


Ruddy well dally with the motor speed adjust, if you must. You can even have a go at your teletypewriter armature and range dials . . . or the line current.

But, please — don't touch the governor, Guv!

The other adjustments are in your Old Baileywick, but the governor adjustment is strictly a job for support. Obviously.

So 'ands off Guv, luv.



Your engine (gasoline, multifuel or diesel) can be pampered to death . . . like where you use lightweight winter oil before cold weather really sets in.

Sure enuff, you'll see some warm-hearted types rush in when the first fall frost withers the pumpkin vines. They figure winter's right on top of 'em, so they drain that heavyweight summer oil and fill up their crankcases with winter-weight oil.

Comes a stretch of Indian Summer — warm, or even downright hot weather — and that poor ole' engine is dyin' for lack of good lubrication.

So make sure that's really Ole Man Winter breathin' down your neck before you make your seasonal oil change. A week of steady cold usually is a signal that winter has really set in. But check the TM's and LO for your equipment to get the exact poop on seasonal lube change.

M151 U-JOINT LUBING

That Adapter, grease gun coupling, FSN 4930-288-1511, in your No. 1 Common Tool Set's lubrication kit is just the thing for putting the lube to your M151 ¼-ton truck's U-joints. You can get this flexible adapter alone. It's listed in SC 4930-IL (Feb 66), and is furnished in Lube Kit, FSN 4930-357-6301.

5-TON WRECKER . . . .

ELECTRIC BRAKE LOCK

Dear Half-Mast,

When operating our M543 5-ton wrecker's crane or rear winch, we're supposed to have the electric brake lock applied. Should the brake lock be used when operating the wrecker's front winch?

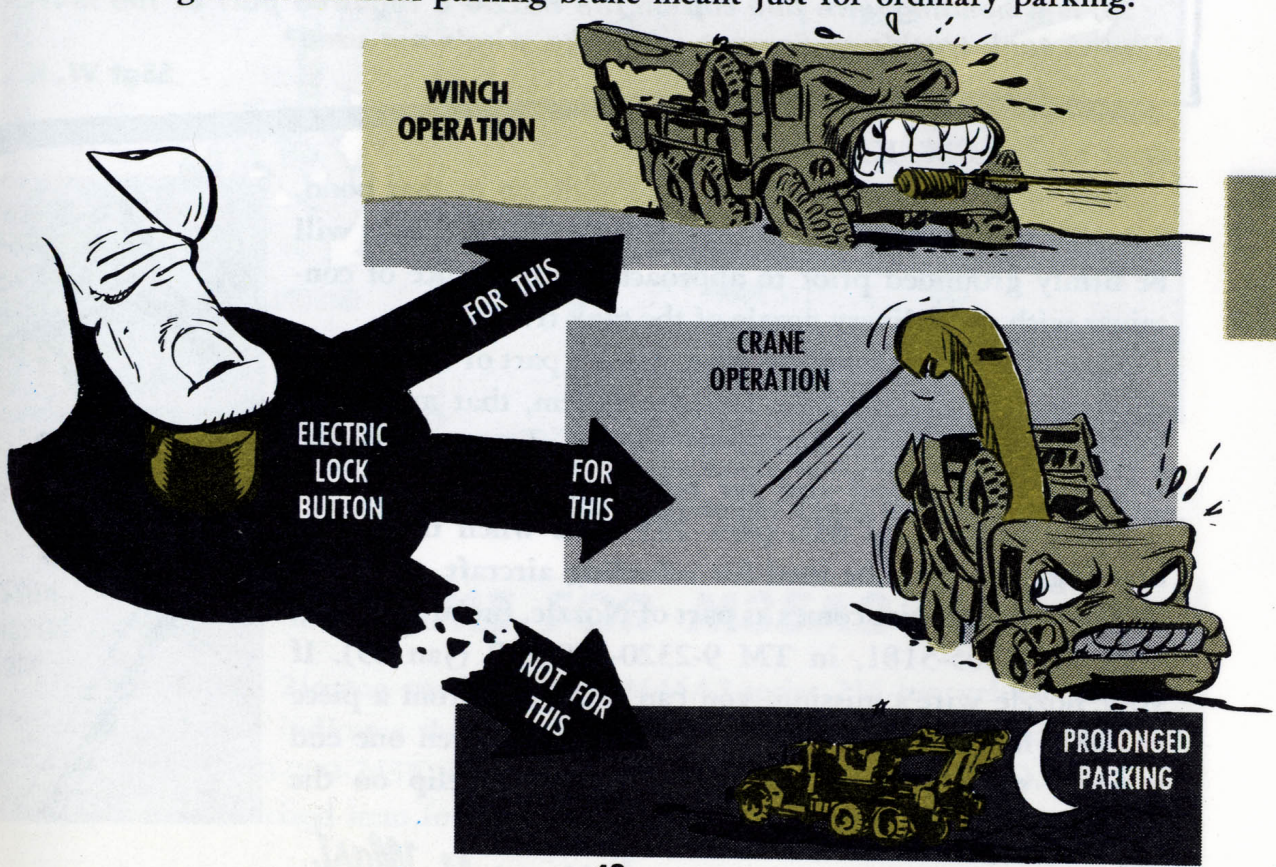
SFC G. A. F.

Dear Sergeant G. A. F.,

The front winch usually is used alone only for recovering the wrecker itself. You'd either be using the wheels for extra power or you'd want 'em rolling free, so you wouldn't want the brakes on.

But if, for some reason, you're using the front winch alone for recovering another vehicle, you should have the electric brake lock on.

Just about as important as when you **should** use the brake lock is when you **shouldn't** — and that's for ordinary parking. The lock keeps constant pressure on the hydraulic brake system and, if held on for a long time, could result in a bust-through in the lines. There's not much point in taking the risk when the wrecker's got a mechanical parking brake meant just for ordinary parking.



Dear Half-Mast,

TM 10-1113 (Jul 65), para 48b(1) says the dispensing nozzle against the fuel tank opening is enough of a bond when refueling tracked or wheeled vehicles from a tank truck. "No other bonding or grounding is necessary."

So, is a bonding wire and clip on the nozzle a required part of the M49C 2½-ton tank truck's equipment when the wire's not used?

SSgt W. K.

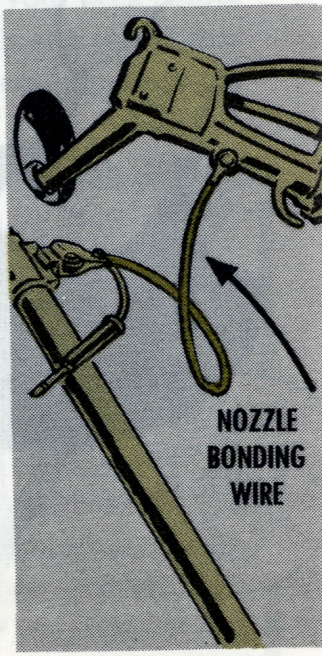
Dear Sergeant W. K.,

First off, you do need a ground in addition to that bond. AR 385-55 (Sep 65) says, in para 19i(2): "Tank trucks will be firmly grounded prior to approaching the orifice of container with the delivery nozzle of the tank truck."

About the nozzle bonding wire, yes, it's part of the M49C's equipment, along with the filtering system, that makes the M49C a dual-purpose tanker — for refueling tracked and wheeled vehicles and also for refueling aircraft.

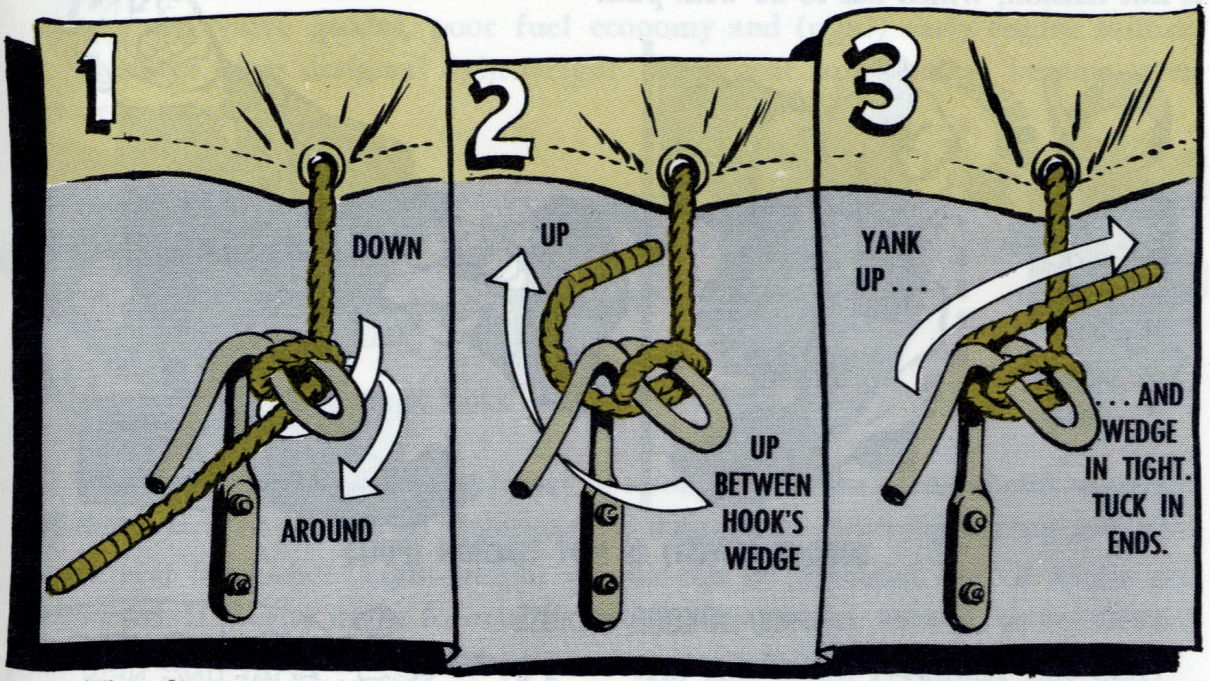
TM 10-1101 (Jul 65), para 133, tells when the nozzle bonding wire must be used for refueling aircraft.

The bonding wire comes as part of Nozzle, fuel dispensing, FSN 4730-565-5181, in TM 9-2320-209-20P (Jan 65). If your nozzle wire's missing, you can make one from a piece of cable like's on the static grounding reel. Fasten one end securely to the nozzle and put an electrical clip on the other end.



TARP TIEDOWN TRICK

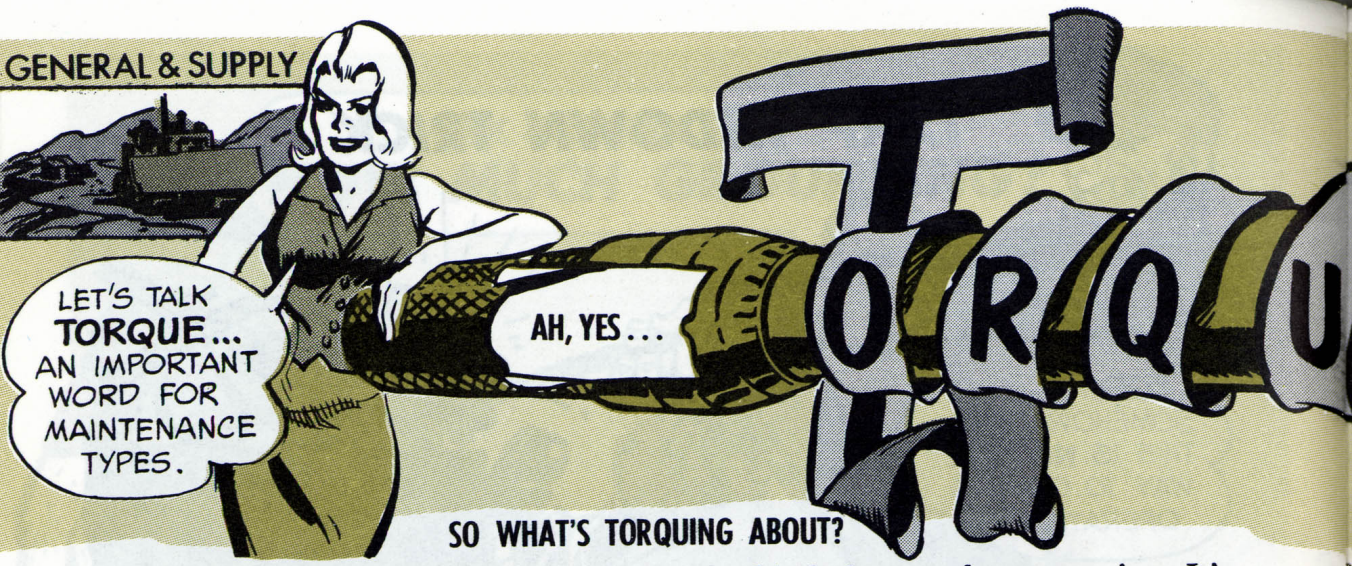
That pigtail-style wedge hook set-up on the side of your cargo truck was put there to make things easier for you—so don't try to make it tough. It's a lashing-type wedge hook (FSN 2540-706-4246).



That does away with complicated sailor-type knots, and makes putting a tarp on or taking it off just a matter of a few flips. Easy to get a tarp taut over the top, too.

SAME FOR M35A2

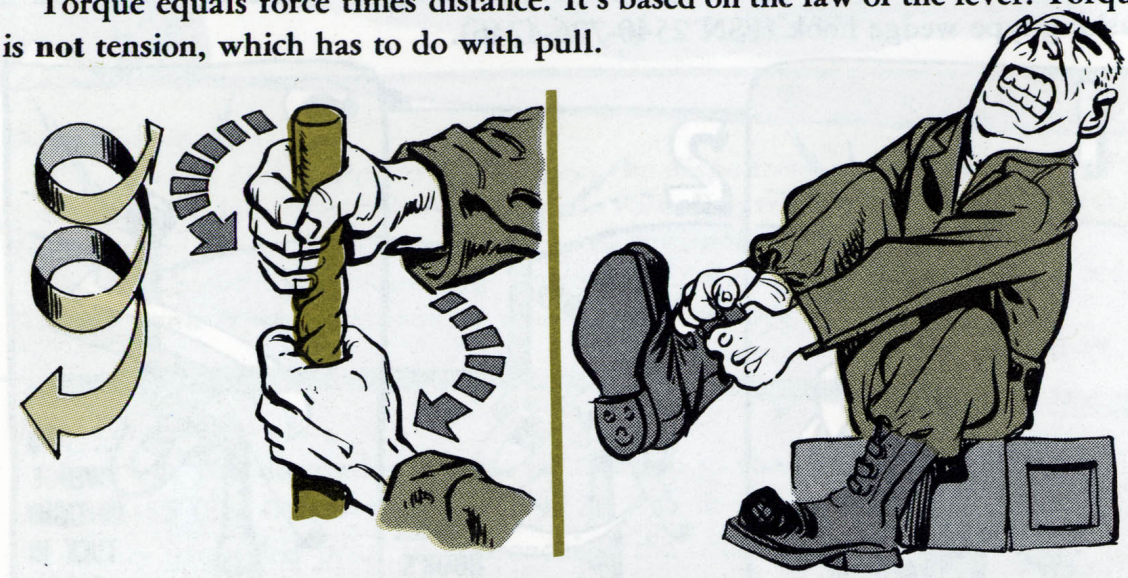
Your M35A2 2½-ton truck or other M44A2-series 2½-ton vehicle uses the same air cleaner indicator that's on the M44A1-series vehicles. It's indicator, air clean, FSN 2940-909-2453, listed in Fed Cat C2940-IL-A (1 Aug 66). The indicator's an authorized item for TM 9-2320-209-20P users.



SO WHAT'S TORQUING ABOUT?

Anyway you turn it—torque is twist, the kind that produces rotation. It's such a screwed-up force that it takes two kinds of measurements to peg it. It's measured in ounces and pounds and inches and feet. Twelve inch pounds make a foot pound.

Torque equals force times distance. It's based on the law of the lever. Torque is not tension, which has to do with pull.

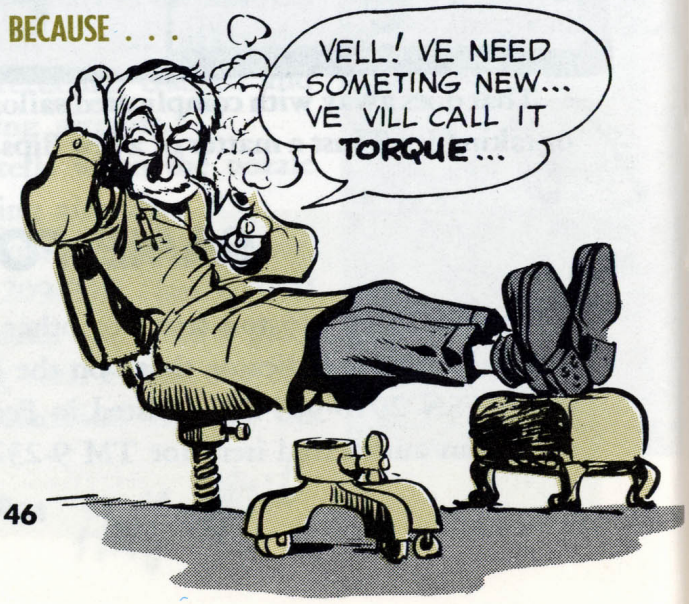


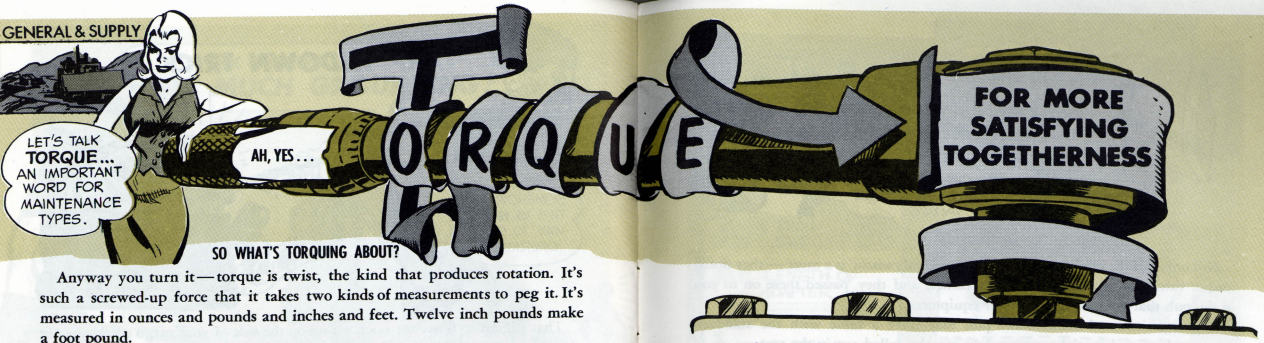
TORQUE (TWIST) IS NOT TENSION (PULL)

YOU TORQUE BECAUSE . . .

Long ago, engineers found that machinery put together with bolts and nuts had to be tightened just right in certain places to give maximum service. To just snug down or tighten a nut or bolt wouldn't hack it!

They found out, f'rinstance, that spark plugs and bearings had to be torqued just so to get the right performance.





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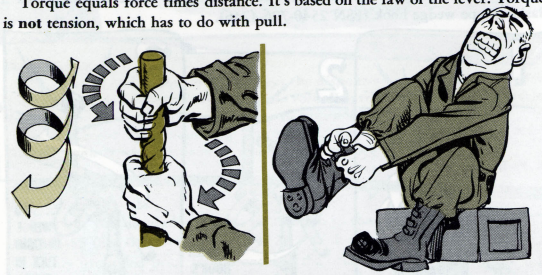

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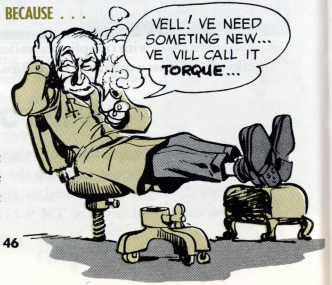
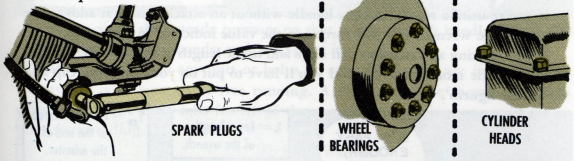


They discovered that engine cylinder head clearances could be lost by over-tightening head bolts. The result — loss of compression, wear and tear on the valves and valve guides, poor fuel economy and (ugh!) early engine failure.

Engineer types designed light-weight equipment and torque became even more important.



Take some applications. A bolt may be stronger than the parts it holds together. If these parts happen to be aluminum or magnesium, over-tightening can produce real headaches. Light-weight metals can be squeezed out of shape and distorted. If they're in the form of a casting, they can be cracked, or the threads in 'em can be stripped. Then you'll find yourself drillin' and tappin' for sure.

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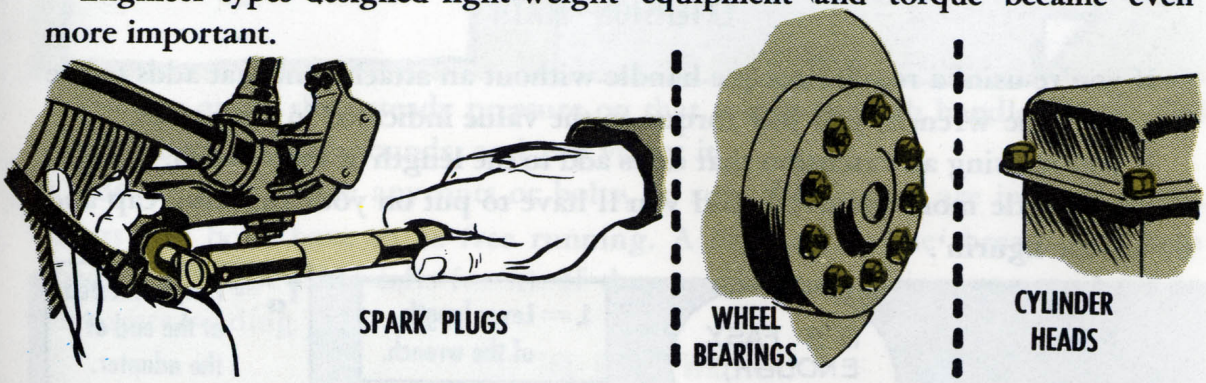

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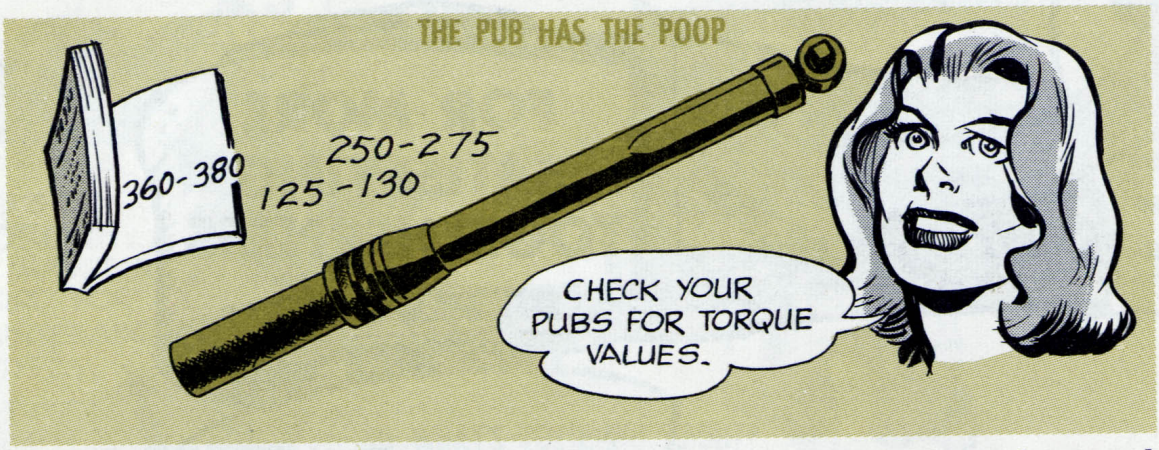


Not only did the engineers find out that special twistin' is a must — they noted torque values as they designed the machines, and they passed these on to you in the pub that goes along with your equipment.

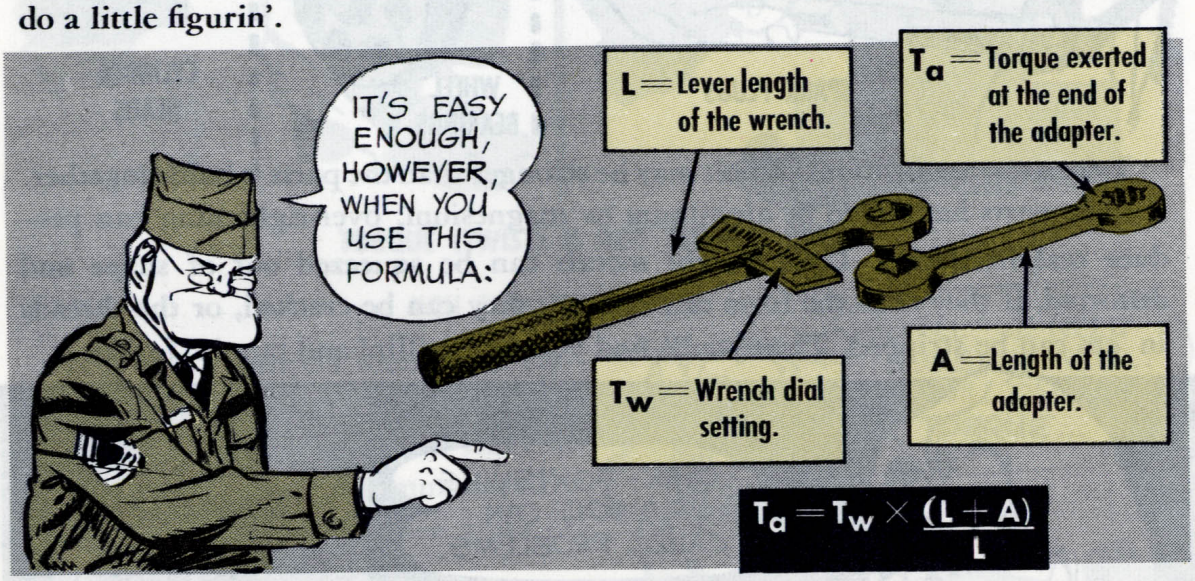
The organizational maintenance pub may have a table with the standard torque values, and special torque values may be called out in the text.

No mechanic worth his salt would tackle a job without his torque wrench and the know-how of using it.

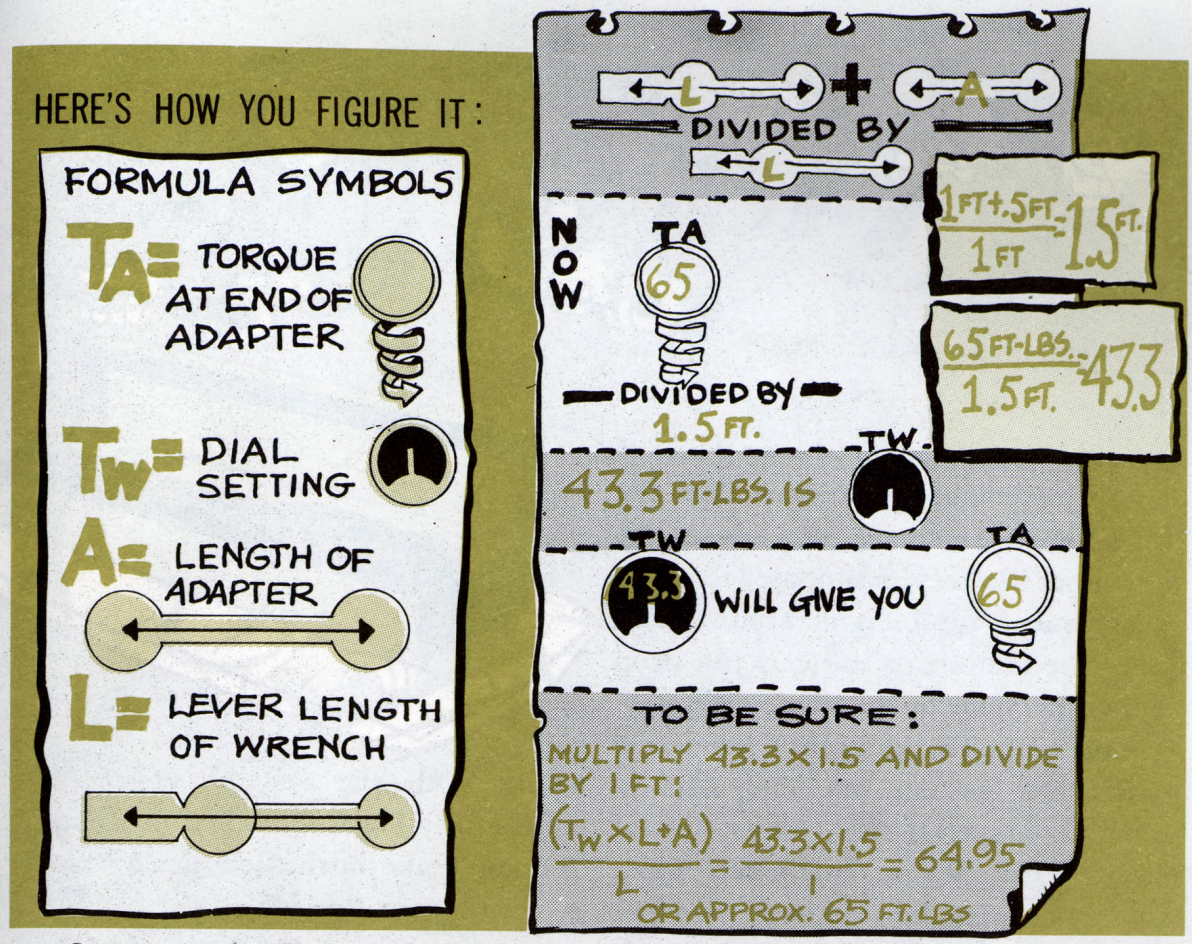
EXTENSION MATH

If you're usin' a regular torque handle without an attachment that adds to the length of the wrench, you just torque to the value indicated in your pubs.

If you're using an extension that **does** add to the length of the wrench, though, there's a little more involved, and you'll have to put on your thinking cap and do a little figurin'.



Now just suppose that you're wrappin' up a job on your equipment, and you come to a nut or a bolt that has to be torqued, but you can't get at it with a regular socket. Let's say it requires a 6-in adapter on that torque wrench to reach it. The pub says the nut is supposed to be torqued down to 65 foot-pounds. Fine!



So you apply slow steady pressure on that torque wrench handle till the dial reads about 43 foot-pounds, and you've got it.

Before you torque any nuts or bolts, be sure the threads are in good shape. Nuts and bolts have to be free running. A little oil on the threads will help (when a torque table calls for it). If they aren't free running, you can't get an accurate reading.

USE THE RIGHT WRENCH

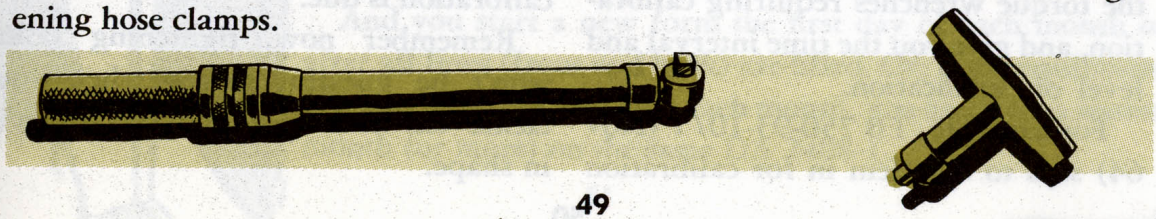
There're many different torque wrenches available. Just be sure you use the one that has the right torque range for the job you have at hand.

The most common types are the bar or cam-type, and the flexible beam type.

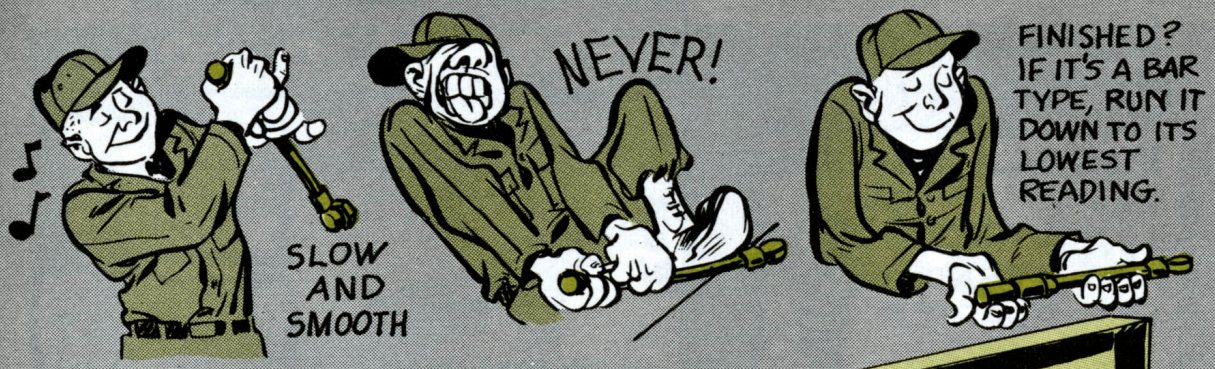
You set the torque you want on the handle of the bar type, and tighten until the wrench slips or "breaks". That's the signal that tells you that you've got the right twist and to ease off on her.

The flexible beam types usually have a dial or a scale right on the handle, and you tighten until the dial indicates the torque you want.

Some torque wrenches are designed for special jobs, like the T-shaped, pre-set torque wrench in the aircraft general mechanic's tool kit. It's intended for tightening hose clamps.



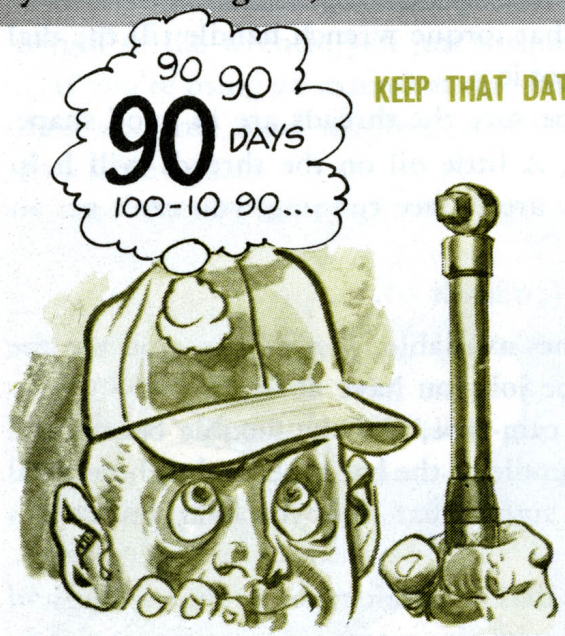
P.S. MORE



TREAT 'EM TENDERLY

Torque wrenches may be made of steel, but you've got to give 'em the kid-glove treatment if you expect 'em to put out like they're supposed to. They won't stand for bangin' around, and you'll be the one to suffer if you drop 'em on the floor or the tool bench.

You want to be mighty particular where you lay 'em, too. They usually come in a special box, under special wraps. That's where they belong when you're not using 'em, not in the tool box along with the rest of your tools where they'll get scratched or dented. It doesn't take much more than a scratch to throw a reading off.



KEEP THAT DATE — TO CALIBRATE

Your torque wrenches need regular servicing. TB's published will show you the torque wrenches requiring calibration, and give you the time interval and level of certification.

For example, TB 750-93-10/1 (Nov 64) says to take 'em in for calibration every 90 days — or more often if need be. Like — if you should drop one accidentally, it should be calibrated before you use it again.

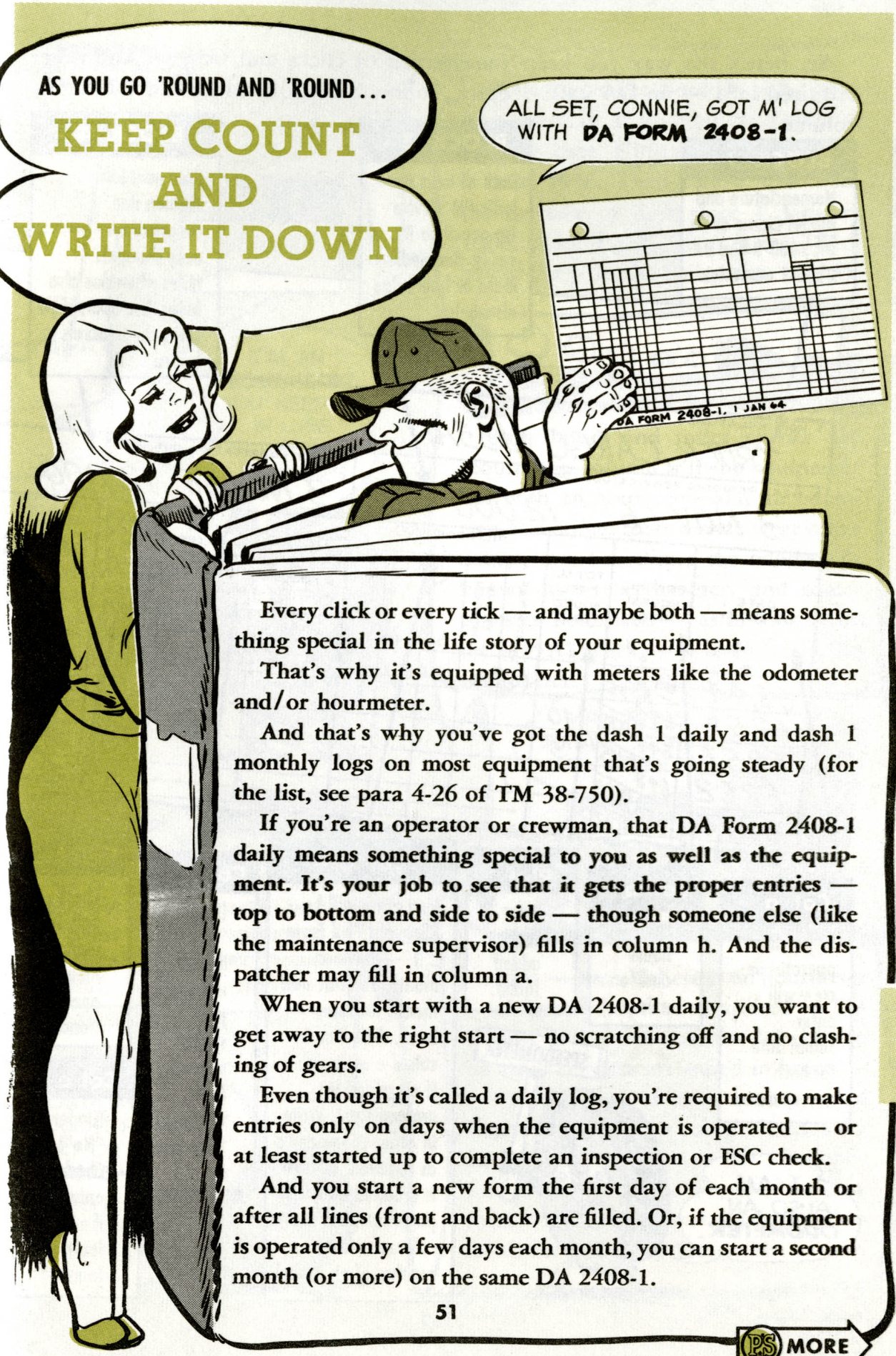
If it's not one of the wrenches that have to be sent back to the factory (like the TCI-750), the TB's also tell your direct support unit how to do the calibratin'.

When a torque wrench is calibrated, the man who does the job fills out a DA Label 80 and puts it on the wrench. This label tells you at a glance the date the check was made, and the date the next calibration is due.

Remember now, tightening tasks won't be guessin' games when you tackle 'em with a torque wrench that's in shape.

AS YOU GO 'ROUND AND 'ROUND...

KEEP COUNT AND WRITE IT DOWN



Every click or every tick — and maybe both — means something special in the life story of your equipment.

That's why it's equipped with meters like the odometer and/or hourmeter.

And that's why you've got the dash 1 daily and dash 1 monthly logs on most equipment that's going steady (for the list, see para 4-26 of TM 38-750).

If you're an operator or crewman, that DA Form 2408-1 daily means something special to you as well as the equipment. It's your job to see that it gets the proper entries — top to bottom and side to side — though someone else (like the maintenance supervisor) fills in column h. And the dispatcher may fill in column a.

When you start with a new DA 2408-1 daily, you want to get away to the right start — no scratching off and no clashing of gears.

Even though it's called a daily log, you're required to make entries only on days when the equipment is operated — or at least started up to complete an inspection or ESC check.

And you start a new form the first day of each month or after all lines (front and back) are filled. Or, if the equipment is operated only a few days each month, you can start a second month (or more) on the same DA 2408-1.

P.S MORE

So, here's the way you keep your record of clicks and ticks — and other required info — on DA 2408-1 daily. Follow it block by block and column by column.

BLOCK 1 —
Nomenclature and model (Same as on DA 2408-8 and DA 2408-1 monthly).

BLOCK 3 —
Date of next periodic PM service (in pencil so it's easily changed). Miles or hours due also helps.

BLOCK 4 —
Date next lubrication due (in pencil for easy change): Miles when due also helps. Use hours if LO sets Lube intervals in hours.

1. NOMENCLATURE: TRUCK, CARGO M35A1

3. NEXT PERIODIC SERVICE DUE (Date): 3 NOV 66 12,000

4. NEXT LUBRICATION DUE (Date): 3 NOV 66 12,000

DATE OF ENTRY (a)	READING HOURS/MILES (b)	TOTAL FUEL ADDED (Gal) (c)	OIL ADDED (Qt) (d) ENGINES	OIL ADDED (Qt) (d) TRANSMISSION	WERE THERE ANY UNCORRECTED DEFICIENCIES OR SHORTCOMINGS IN COLUMN C, DA FORM 2404? (Check one) (e) YES	(e) NO	CHECK BELOW IF EQUIPMENT IS OPERATIONAL (f)	SIGNATURE OF OPERATOR OR CREW CHIEF (g)
6244	642 B035		(Brought fwd from Aug)			✓	✓	R.D. Gry
6251	644 B071	10					✓	R.D. Gry
6257	647 B115	5				⊗		R.D. Gry
6262	648 B120		1					R.D. Gry
6274	650 B132						✓	R.D. Gry

Col a —
Dispatcher, operator or crew will enter Julian date for each day operated.

Col b —
Enter hours and/or miles.

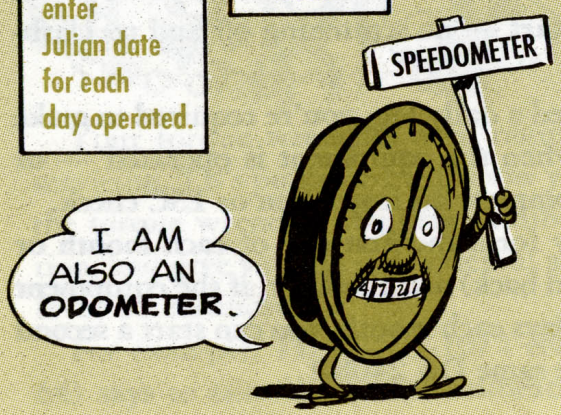
Col c —
Enter fuel added (gals).

Col d —
First entry will be "Brought Fwd From ....)"—previous month. To start new month on same form, draw line in cols d-e as shown. If oil added list amount (qts). Write in other components as required. (If item is dropped by parachute, use one column to enter number of air drops).

Col e —
(Under "Yes") If fault is found put status symbol here. (Get it from DA 2408.)

Col f —
Check only if equipment is operational.

Col e —
(Under "No") Check only if no faults found.

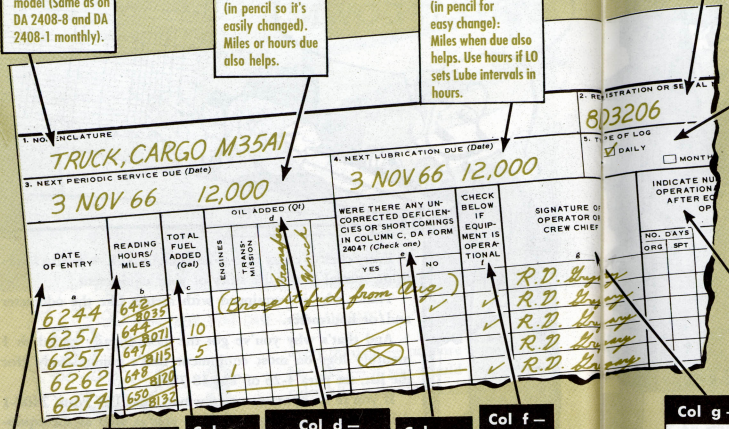


So, here's the way you keep your record of clicks and ticks — and other required info — on DA 2408-1 daily. Follow it block by block and column by column.

BLOCK 1 — Nomenclature and model (Same as on DA 2408-8 and DA 2408-1 monthly).

BLOCK 3 — Date of next periodic PM service (in pencil so it's easily changed). Miles or hours due also helps.

BLOCK 4 — Date next lubrication due (in pencil for easy change): Miles when due also helps. Use hours if LO sets Lube intervals in hours.



BLOCK 2 — Registration or serial number.

BLOCK 5 — Check "daily" box.

Col a — Dispatcher, operator or crew will enter Julian date for each day operated.

Col b — Enter hours and/or miles.

Col c — Enter fuel added (gals).

Col d — First entry will be "Brought Fwd From ....)"—previous month. To start new month on same form, draw line in cols d-e as shown. If oil added list amount (qts). Write in other components as required. (If item is dropped by parachute, use one column to enter number of air drops).

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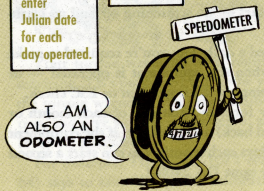
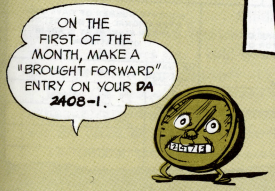
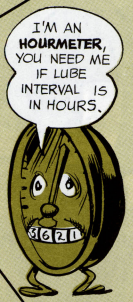
Col g — Sign here to verify entries in columns b thru f.

Col h — (Not shown) is for entries by mechanic or maintenance supervisor.







Your dispatcher should have a Julian date calendar. If not you can make up a Julian date. F'instance, take the last 6 from 1966. Then follow that with the number of days since 1 January 1966. Since 4 July 1966 is the 185th day of the year, the Julian date is 6185.

Both hours and miles entries are required in column b if the equipment has both an hourmeter and an odometer. Sometimes these meters wear other names, too. Sometimes the odometer's known as a speedometer, and sometimes an hourmeter — as in the case of the M35A1 truck — is included in the tachometer.

Also — even if there is no hourmeter — estimated hours are required on DA 2408-1 if the intervals for lubrication or other services are stated in hours.

On the first of each month, total hours and/or miles accumulated must be brought forward to the first open line of the DA 2408-1 — if it's a new form. (Your supervisor needs monthly totals for DA 2408-1 monthly.)

PS MORE

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Registration or serial number.

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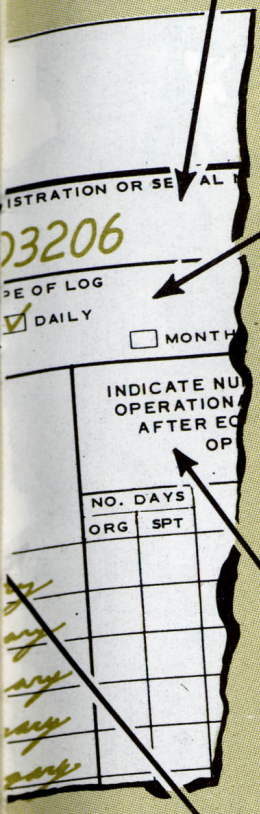
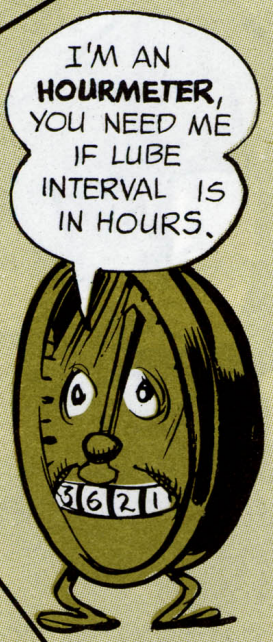
Check "daily" box.





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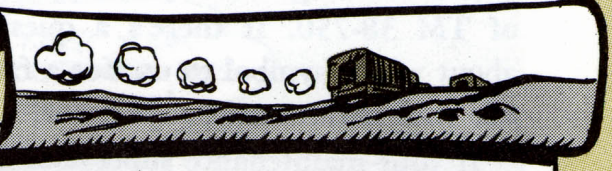

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P.S. MORE

When you make entries on faults in column e, check both the DA 2404 used for the before-during-after-operational checks — your daily inspection — and DA 2408-14, the Uncorrected Fault Record, in the log.

Symbols to be used for faults you find are listed, with definitions, on DA 2408 in the log and in para 3-4c(2)(j) of TM 38-750. If there's a question about which symbol to use for a fault, ask your maintenance supervisor.

If your maintenance supervisor asks you to make the entries on DA 2408-1 monthly, get the totals from the DA 2408-1 daily and make the entries as shown below. Leave columns e, f and g blank.

1. NOMENCLATURE: TRUCK, CARGO M35A1

2. REGISTRATION OR SERIAL NUMBER: 8D3206

3. NEXT PERIODIC SERVICE DUE (Date)

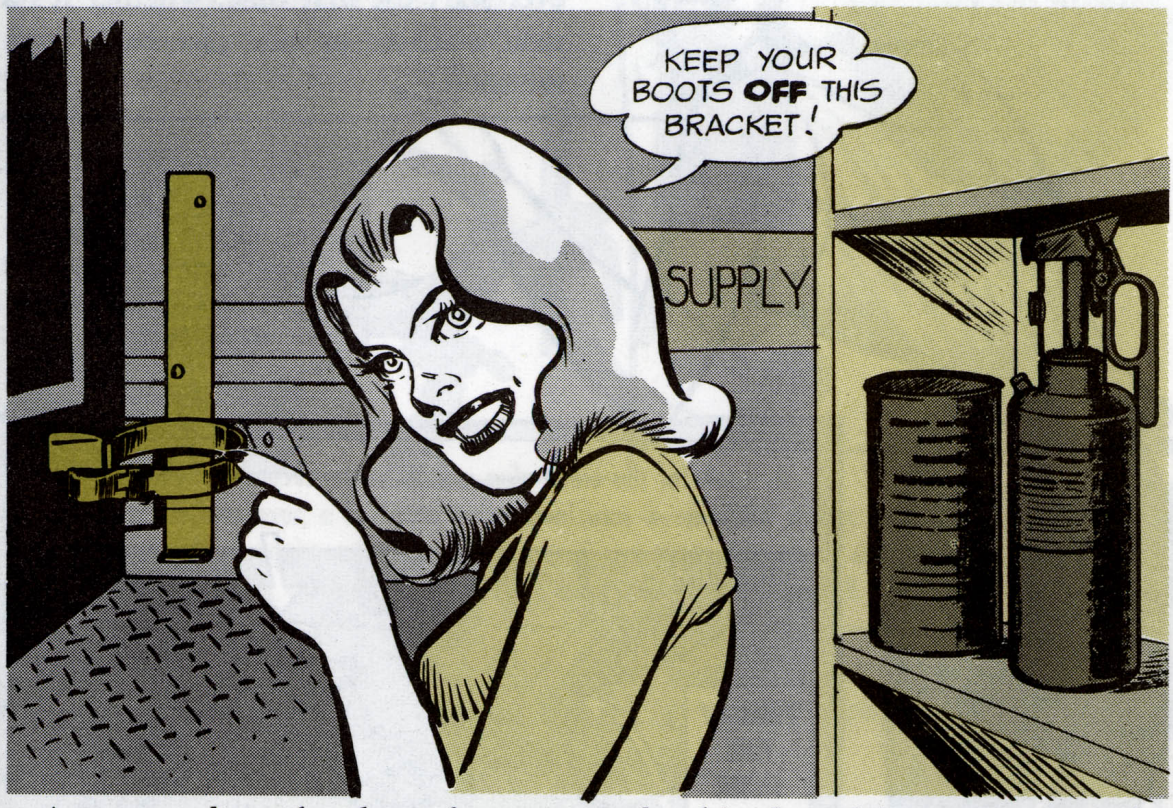
5. TYPE OF LOG: ☐ DAILY ☑ MONTHLY

DATE OF ENTRY	READING HOURS MILES	TOTAL FUEL ADDED (Gal)	OIL ADDED (Qt) d			ATURE OF ERATOR OR REW CHIEF	INDICATE NUMBER OF DAYS NON-OPERATIONAL AND SIGN BELOW AFTER EQUIPMENT IS AGAIN OPERATIONAL h	
			ENGINES	TRANS-MISSION			NO. DAYS ORG	NO. DAYS SPT	SIGNATURE
a	b	c				g			
Aug 66	642/8035	35	2					1.0	B. E. Irwin
Sep 66	648/8120	15	1					.5	B. E. Irwin

EMPTY DECON HOLDER

When the situation allows (and local SOP says so) you can keep the M11 portable decon (FSN 4230-720-1618) stowed in the supply room, instead of hanging on your equipment.

The decon's bracket, itself, natch, must be installed and kept in good order. But, the empty container, its nitrogen cylinders and the DS-2 decon agent, can sit safely in storage until needed.



An empty decon bracket, of course, needs a bit of special care. You gotta be careful something else isn't hung on it, for one. And, you have to take care it's not banged, busted or used as a foot stool.

The OK on leaving the decon in storage is in Change 2 (20 Dec 65) to TM 3-4230-204-15.

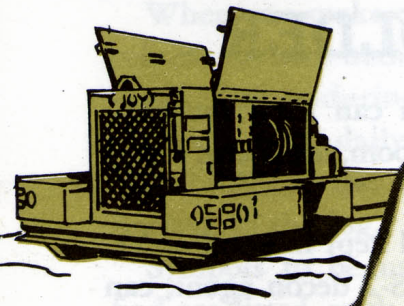
OTHER DECON NEWS

The change, which incidentally changes the -15 TM to an organizational manual, also gives you a cold-weather caution. It says the decon's not effective in temps below approximately -15°F.

It also OK's use of a three-strand-wire lead seal (like the kind used on some fire extinguishers) in place of the two-strand-wire seal (FSN 5340-598-3433) listed for the decon on page 20 of the TM.

The three-strand-wire seal is a non-stocked item, tho. So in addition to quoting FSN 5340-NSN, you'd best also quote the TM change, if you order the seal.

250 CFM COMPRESSORS . . . BEGIN BEFORE

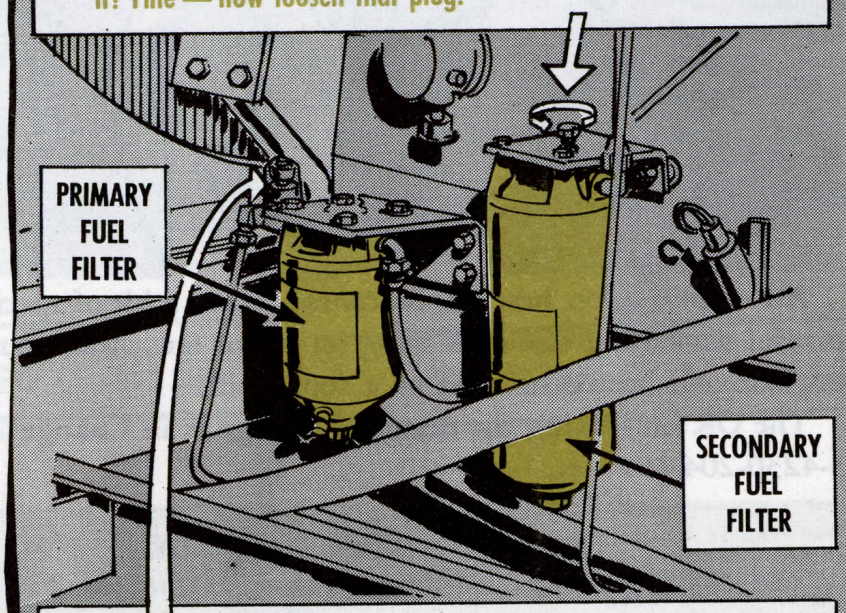


Getting going with a rotary air compressor takes know-how.

Truth is, if it's a Joy 250-CFM unit, there's a job you need to do before you ever start the first time, whether it's a new machine or one just back from the shop.

THAT IS, YOU HAVE TO DO A BLEEDING OPERATION TO HEAD OFF AIR-LOCK **FUEL STARVATION**.

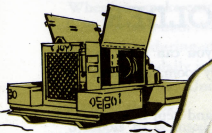
1. Look for the bleed plug on top of the secondary fuel filter. See it? Fine — now loosen that plug.



2. Then get hold of the hand pump, the push-button dingus on the fuel line into the primary fuel filter, and shove on the pump several times.

Keep on until only pure fuel — no air bubbles — gurgles out from around the plug. Then tighten the plug back good and wipe up the spilled fuel.

250 CFM COMPRESSORS . . . BEGIN BEFORE YOU START



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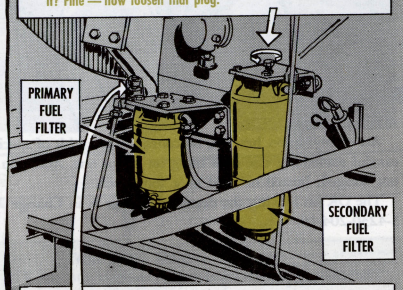

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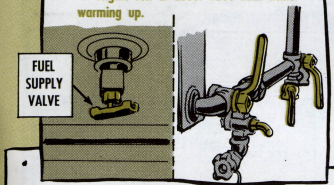
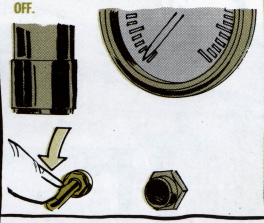
TO START HER UP

1. Be sure the fuel supply valve is OPEN and one service line valve is OPEN. Make sure one air service line valve is HALF-OPEN to let engine run at about 1200 RPM while warming up.



2. Be absolutely certain ignition switch is OFF.



3. Inch machine over, a half turn or so at a time, by pushing starter button and letting up, then pushing again until it's turned over 5 or 6 times. This clears out excess oil that would otherwise break the vanes, and it's the most important item of all.

4. Turn ignition switch ON and push start button.

5. Hold start button DOWN until oil pressure is over 15 PSI. Otherwise the engine will die.

6. If the engine does die, make sure all air pressure is drained away, and then go through the whole start procedure again: Switch OFF, jog it over 5 or 6 times, switch ON, and start. If you don't, fresh oil that came in the chamber when the engine ran will break your compressor vanes and maybe ruin the whole works.

MORE

YOU START

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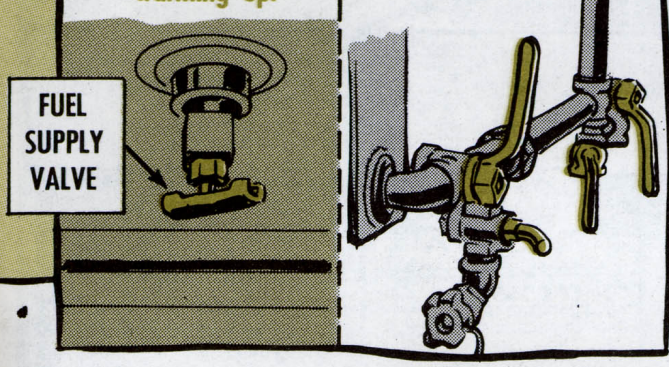

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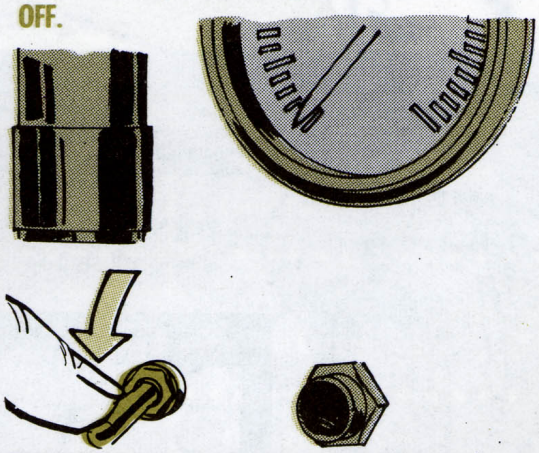

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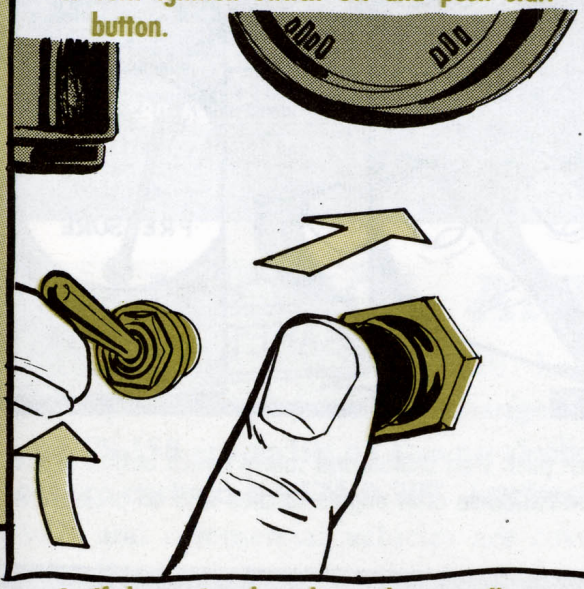

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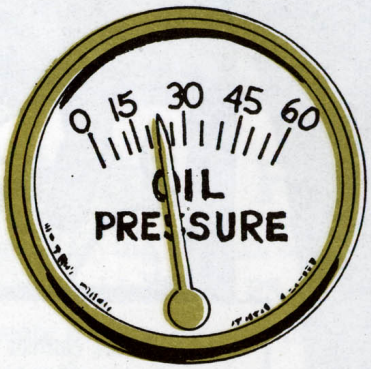

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PS MORE

DAVEYS ARE DIFFERENT

And if either kind won't kick off after 30 seconds of trying, give it a 2-minute rest.

GET A CHARGE OUT OF THIS

Stymied in your search for CO_2 for a limp life preserver? Here's how to match your life preserver to your cylinder or cartridge.

PRESERVER FSN	NAME	CO_2 FSN AND TYPE
4220-630-8714	Life Preserver, Aircraft Crew LPU-2/P	4220-372-0585, Cartridge, Carbon Dioxide, Type 1
4220-630-1463	Life Preserver, Aircraft Crew Mark II	4220-287-3740, Cartridge, Carbon Dioxide, 8-gram
4220-542-5717	Life Preserver, Field Army MIL-L-15581 (for amphibious operations)	4220-372-0585 cartridge, Carbon Dioxide, Type 1, MIL-C-25369, 26 grams
4220-657-2197	Life Preserver, Parachutist B-7	4220-837-3322, Cylinder, Carbon Dioxide, 2-oz. Fed Spec BB-C-101
4220-589-6845	Life Preserver, Vest, L-6077D	4220-287-3740, Cartridge, Carbon Dioxide, MIL-C-601 Type 1, 8 gram

ALCOHOL AND DIESEL FUEL

Change 1 (Feb 63) to TM 9-207 has a caution saying that alcohol should not be added to diesel fuel. This change and the short blurbs in PS 155 (page 11) and PS 158 (page 10) on this no-alcohol bit were meant only for tactical vehicles that're covered by TM 9-207. Engineer type equipment is covered by TB Eng 347, and commercial vehicles are covered by specific manufacturer's instructions. Some tactical vehicles were made exempt by special teletype directives and are not involved in the anti-alcohol caution. Before applying the no-alcohol-in-diesel-fuel info, check real close and see whetner TM 9-207, Change 1 (Feb 63) applies to the equipment you're winterizing.

FIX 'EM...

ATTENTION OPERATORS— ONE GOOD WAY TO KEEP YOUR HEAVY EQUIPMENT ROLLING IS TO USE THE NEW **TUBELESS TIRE REPAIR KIT** WHEN YOU GET A PUNCTURE. HERE IT IS:

TUBELESS TIRE REPAIR KIT, FSN 4910-922-6921

Bonding Compound, Tire Repair

4910-922-6917

Repair Material, Pneu Tire (thread)
4910-922-6915

Injector Tool, Tubeless Tire Repair
4910-922-6922

Knife, Skiving
5110-595-8402

Needle, Injector Tool
4910-922-6920

Leak Detector,
Pneu Tire
4910-922-6919

Applicator, Plastic, Leak Detector
4910-922-6918

Box, Metal, Tire Repair Kit

4910-922-6916

This kit's available thru the U.S. Army Weapons Command, Rock Island Arsenal, Illinois 61202.

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- Box, Metal, Tire Repair Kit — 4910-922-6916

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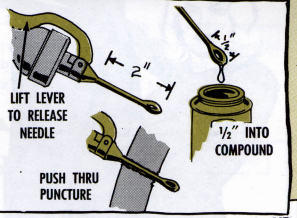
ROLL 'EM

The kit's easy to use, once you get the hang of it. Here's what you do:

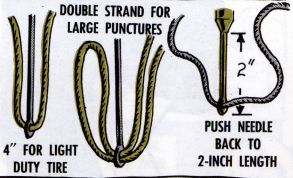
PROBING AND WORKING COMPOUND INTO PUNCTURE

1. Adjust needle length to 2 inches sticking out of tool. (Releasing lever lock on handle lets you move needle in or out. If you can't get hold of the needle, unscrew head of tool and push needle out.) Dip needle ½ inch in bonding compound. Push needle into puncture, following direction of injury. (You don't have to let air out of tire to make repair.) Then pull needle out of tire.



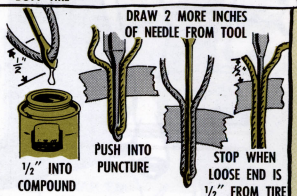
THREADING NEEDLE

2. Pull needle out of tool to full length. Draw material out of tool and thread 4 inches thru needle eye for light-duty tire (8 inches for heavy-duty tire). For large punctures, thread twice that much thru needle and then thread back thru for double strand. Now push needle back into tool to 2-inch length.



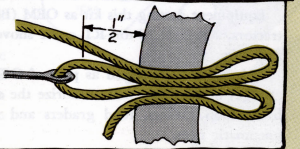
DIPPING AND PLUGGING

3. Dip end of threaded needle ½ inch into compound. Grip tool so lever locks needle and push needle into injury with steady pressure, following direction of puncture. When front of tool reaches tire, release lever and draw 2 more inches of needle from tool. Repeat process (with only 2 inches of needle at a time) until loose end of material is ½ inch from tire.



WITHDRAWING NEEDLE

4. With steady pull, withdraw needle until tip is ½ inch outside of tire. Cut material off at needle eye. Repeat 1 through 4 until puncture or cut is plugged. Try it for any size hole, but never over pack. (Cutting material diagonally makes a point for easier threading of needle.)



POP MORE

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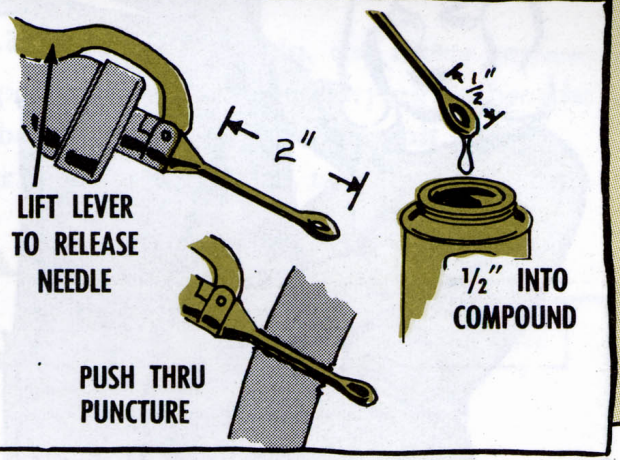
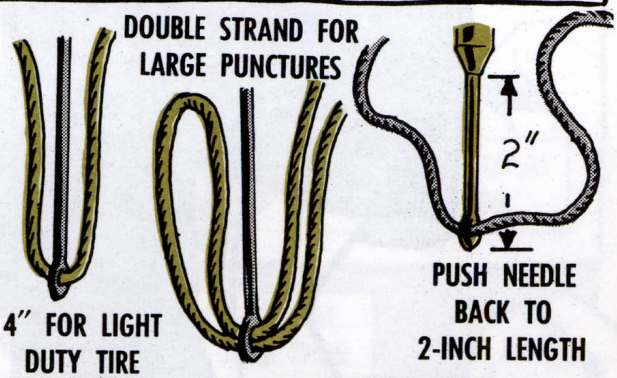


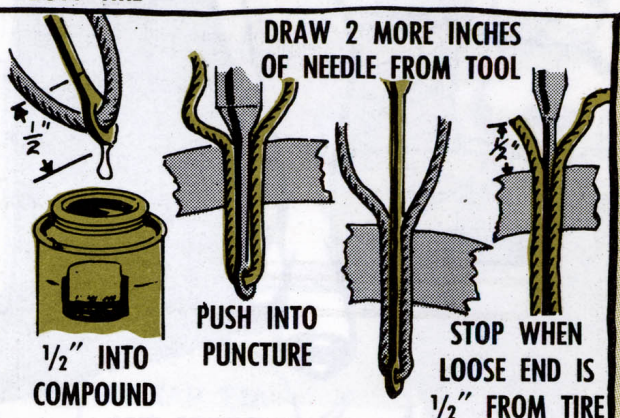
THREADING NEEDLE

2. Pull needle out of tool to full length. Draw material out of tool and thread 4 inches thru needle eye for light-duty tire (8 inches for heavy-duty tire). For large punctures, thread twice that much thru needle and then thread back thru for double strand. Now push needle back into tool to 2-inch length.



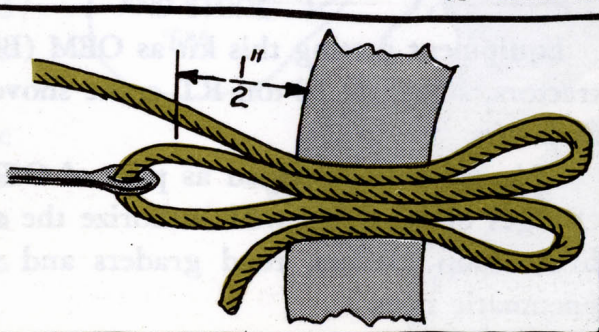
DIPPING AND PLUGGING

3. Dip end of threaded needle ½ inch into compound. Grip tool so lever locks needle and push needle into injury with steady pressure, following direction of puncture. When front of tool reaches tire, release lever and draw 2 more inches of needle from tool. Repeat process (with only 2 inches of needle at a time) until loose end of material is ½ inch from tire.



WITHDRAWING NEEDLE

4. With steady pull, withdraw needle until tip is ½ inch outside of tire. Cut material off at needle eye. Repeat 1 through 4 until puncture or cut is plugged. Try it for any size hole, but never over pack. (Cutting material diagonally makes a point for easier threading of needle.)



P.S. MORE

Equipment getting this kit as OEM (BIIL) includes loaders, graders, wheeled tractors, scrapers, 20-ton RT crane shovel, and the 6,000-/and 10,000-lb RT fork lifts.

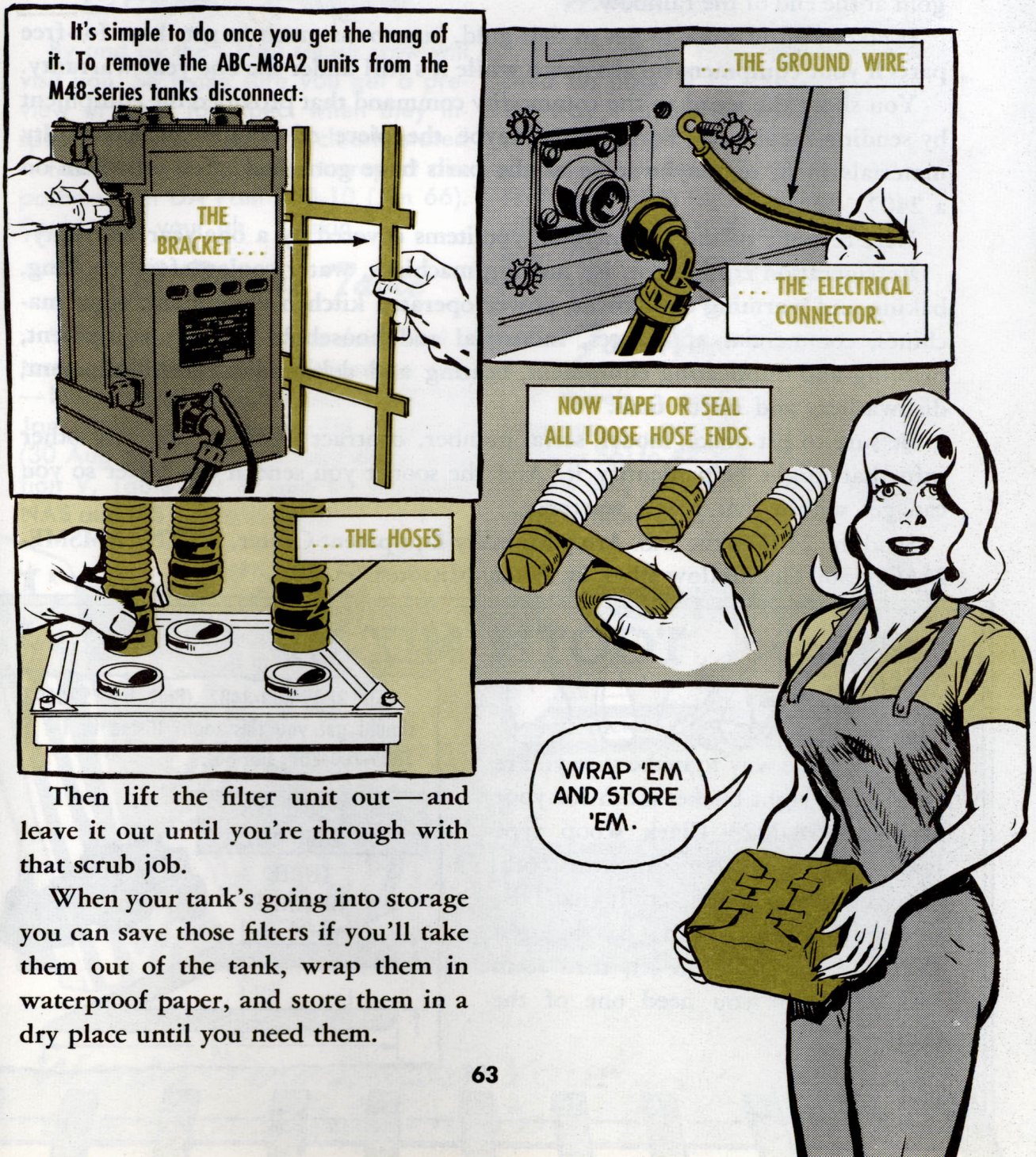
This set will be issued as part of OEM for new equipment. Operator's TM changes or revisions will authorize the set for bulldozers, rough terrain fork lifts, scoop loaders, road graders and towed scrapers that roll on tubeless pneumatic tires.

TANK'S CBR FILTERS... TAKE 'EM OUT

In spite of everything some Joes get slap-happy with water when they're cleaning the inside of their tanks. When they do, they're putting their gas-particulate filter unit out of commission.

Those units aren't waterproof and when water gets in, the filters become saturated with water. When that happens, it would be like trying to breathe through a wet sponge if you tried to breathe through the filter unit.

To make sure you don't ruin the filter units in your tank, take 'em out before you do that cleaning job.



Then lift the filter unit out—and leave it out until you're through with that scrub job.

When your tank's going into storage you can save those filters if you'll take them out of the tank, wrap them in waterproof paper, and store them in a dry place until you need them.

WARRANTY GOLD STRIKE

Getting new parts for your equipment for-free is just about like finding that gold at the end of the rainbow.

It takes a little work to get to that gold, but not as much to get those for-free parts if your equipment breaks down while it's still under the one-year warranty.

You shoot the word to the commodity command that provided the equipment by sending them a DA Form 2407. Maybe the piece of equipment has faulty materials in it, or maybe some of the parts have gone bad, then tell them on a 2407.

Here're some of the commercial-type items covered by a one-year warranty:

Refrigeration equipment, ice making machines, water coolers, food cooking, baking and warming equipment, power operated kitchen equipment, office machines, commercial appliances, industrial and household laundry equipment, printing and duplicating equipment, heating and dehumidification equipment, dishwashers and coffee urns.

Be sure to list make, model, serial number, contract number, and any other info that might help identify it. And the sooner you send it the better so you can get within that year's warranty.

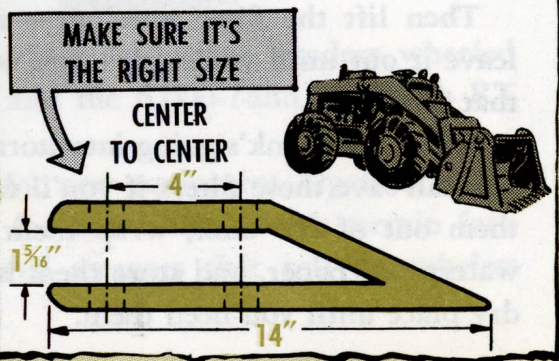
Send the 2407 to the U.S. Army Mobility Equipment Center, ATTN: AMSME-MAO, 4300 Goodfellow Blvd, St. Louis, Missouri 63120.

TOOTH MIX-UP

There's one way to make sure you're getting the right bucket tooth for your Model 175A-M23 Clark scoop type loader, and that is to measure the tooth.

If you get one from supply that's the wrong size (even though it has the right FSN and Part No. on it), turn it in and tell them you need one of the right size.

FSN 3805-803-3487 (Part No. 526693) should get you this tooth (listed in TM 5-3805-200-20P, Jan 66):



Connie Rodd's BRIEFS

CMMI Preview

By and by the CMMI rating crew will visit you. So make sure you get a preview of what to expect when they inspect. How you're rated is clearly stated — from team composition to report disposition — in DA Pam 750-10 (Jun 66). Could save your ah . . . skin.

A/C Torque Table

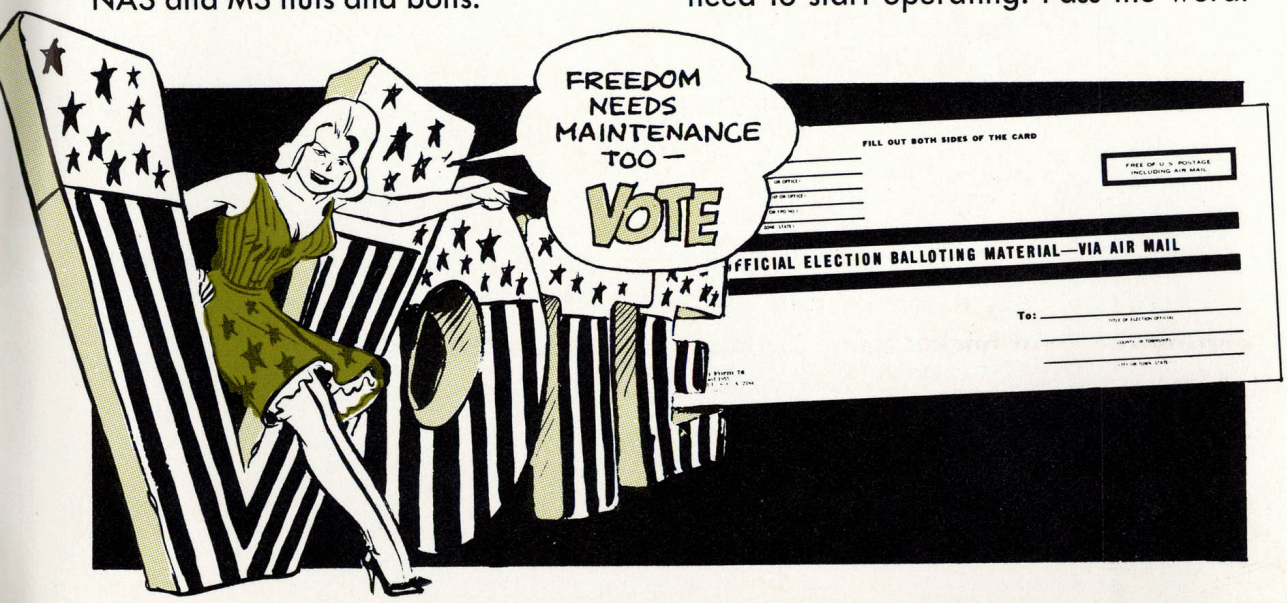
When you aircratt types don't find a torque table in your maintenance pub — like the Huey TM 55-1520-211-20 (20 Jan 66) — there's always TM 55-405-2 (30 Aug 62) on aircraft hardware. Section V, Table XVI is used for standard NAS and MS nuts and bolts.

Hold The MA's!

You're right! That "60-milliampere" cited on page 9 of PS 166 is wrong! The way it should've read was, "If your LINE SELECTOR switch is set at '60,' you should adjust the bias resistor (of your TT-76 or TT-98) for a reading of 12.25 milliamps. If the LINE SELECTOR switch is on "20," you should get a reading of 8.75 milliamps.

For New Outfits

If there's a newly organized outfit near you . . . pass the word. Change 7 (30 Aug 66) to AR 310-1 gives the scoop on how they get all the publications they need to start operating. Pass the word.



Would You Stake Your Life right now on the Condition of Your Equipment?

LUBRICANTS	EXPECTED TEMPERATURE			INTERVALS
	ABOVE +32°F	+40°F TO -10°F	0°F TO -65°F	
OE - LUBRICATING OIL, INTERNAL COMBUSTION ENGINE	OE 10	OE 10	OES	D - DAILY Q - QUARTERLY S - SEMIANNUA
GAA - GREASE, AUTOMOTIVE AND ARTILLERY	GAA	GAA	GAA	
OES - LUBRICATING OIL, INTERNAL COMBUSTION ENGINE - SUBZERO				
FOR ARCTIC OPERATION REFER TO TM 9-207				